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MACHINE-GUN DRILL REGULATIONS

(PROVISIONAL)

1917

PREPARED AND EDITED AT THE
ARMY WAR COLLEGE

DECEMBER, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
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WAR DEPARTMENT.

Document No. 723.

Office of The Adjutant General.

WAR DEPARTMENT,
WASHINGTON, *December 10, 1917.*

The following pamphlet, entitled "Machine-Gun Drill Regulations (Provisional), 1917," is published for the information and guidance of all concerned.

[300.7 A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

JOHN BIDDLE,

Major General, Acting Chief of Staff.

OFFICIAL:

H. P. McCAIN,

The Adjutant General.

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MACHINE-GUN DRILL REGULATIONS.

UNITED STATES ARMY, 1917.

DEFINITIONS.

Alignment: A straight line upon which several elements are formed, or are to be formed; or the dressing of several elements upon a straight line.

Band of fire: A band of fire is formed when the cone of fire is directed at one point and the gun is so elevated that the maximum ordinate of the trajectory will not be greater than the height of a man.

Base: The element on which a movement is regulated.

Battle sight: The position of the rear sight, rifle or machine gun, when the leaf is laid down.

Barrage (curtain of fire): A machine-gun barrage is the combined sheaf of several guns at long range. It may be employed defensively, but, normally, it is delivered over the heads of friendly troops to cover their advance. When it is moved forward by time table, or at a stated distance in advance of the leading elements of the attack, it is termed a *creeping barrage*.

Bursts: A term applied to a greater or less number of shots delivered automatically between successive releases of the trigger.

Carts: Includes both the gun and ammunition carts.

Center: The middle point or element of a command.

Close line: Is a formation in which the squads are in line with an interval of 3 paces between carts.

Column: A formation in which the elements are placed one behind another.

Combat train: Includes the two 4-mule ammunition wagons, the kitchen wagon, and two spare gun carts.

Combined sights: Are used for the same purpose as searching fire, i. e., to secure distribution in the direction of depth. For

this fire two or more guns must be employed, and such differences made in the elevation of the guns or each pair of guns that their beaten zones will overlap and a greater total depth of beaten zone be thus secured.

Combined sights and searching fire: As a means of adjustment, must not be confused with these methods when used in fire for effect. As a method of adjustment, they are used when the range can not be determined with sufficient precision to admit of the use of a single elevation. In fire for effect they are used on deep targets, which would be but partially covered by a single elevation.

Conduct of fire: The employment of the technical means necessary to cause fire of the desired nature to be brought to bear upon the target.

Covering fire: Fire delivered to facilitate the movement of troops and minimize their losses.

Deploy: To extend the front. In general to change from column to line or from close order to extended order.

Depth: The space from head to rear of any formation, including the leading and rear elements. The depth of a man is assumed to be 12 inches.

Distance: Space between elements in the direction of depth. Distance is measured from the back of the man in front to the breast of the man in rear. The distance between ranks is 40 inches in both line and column.

Distributed fire, traversing fire, or trap traversing: This method of fire is employed against linear targets and is applied by means of a series of short bursts, of from 5 to 10 shots. The object being to cover as wide a front as possible with effective fire and without using more ammunition than is absolutely necessary.

Element: A file, squad, platoon, company, or larger body, forming part of a still larger body.

Field train: Includes the supply wagon, the water and ration carts.

File: Two men, the front-rank man and the corresponding man of the rear rank. The front-rank man is the *file leader*. A file which has no rear-rank man is a *blank file*. The term *file* applies also to a single man in a single-rank formation.

File closers: Such officers and noncommissioned officers of a company as are posted in rear of the line; for convenience, all men posted in the line of file closers.

Fire direction: The tactical direction of one or more units with a view to bringing their fire to bear on the right place at the right time.

Fire discipline: That condition resulting from training and practice which insures an orderly and efficient working of the personnel in the delivery of fire.

Fire for effect: Has for its object the infliction of losses upon the enemy.

Firing company: Includes the guns and personnel necessary for the conduct and control of fire.

Fixed fire: Is that in which the gun is directed and fire delivered at a small target, or at a single aiming point on a large target.

Flank: The right or left of a command in line or in column; also the element on the right or left of the line.

Flanking fire: Fire directed from a position slightly in advance of a line, parallel to that line.

Formation: Arrangement of the elements of a command. The placing of all fractions in their order in line, in column, or for battle.

Front: The space, in width, occupied by an element, either in line or in column. The front of a man is assumed to be 22 inches. Front also denotes the direction of the enemy.

Guide: An officer, noncommissioned officer, or private upon whom the command or elements thereof regulates its march.

Head: The leading element of a column.

Horse length: A term of measurement. For convenience in estimating space a horse length is considered as 3 yards; by actual measurement it is about 8 feet.

Indirect fire: There are two kinds of indirect fire:

First. When the target is visible but indistinct. In this case an auxiliary aiming mark is selected and the sight so corrected that the cone of fire will strike the target.

Second. When the target is masked from the gun position. In this case the gun must be laid by quadrant elevation.

Enfilade fire: Fire that is directed on a trench or line from a position in prolongation of the trench or line.

Interval: Space between elements of the same line. The interval between men in ranks is 4 inches and is measured from elbow to elbow. Between companies, squads, etc., it is measured from the left elbow of the left man or guide of the group on the right to the right elbow of the right man or guide of the group on the left.

Left: The left extremity or element of a body of troops.

Line: A formation in which the different elements are abreast of each other. When the elements are in column the formation is called a line of columns.

Machine guns (machine gun, heavy type): A weapon firing rifle ammunition automatically. It is provided with a stable mount, suitable mechanism for controlling the motion of the barrel in elevating and azimuth, and is capable of sustained firing.

Mask (obstruction): An object, or a feature of the terrain, which prevents the gunner from seeing the target. Friendly troops which prevent firing on a target.

Order, close: The formation in which the units in double rank are arranged in line or in column with normal intervals and distances.

Order, extended: The formation in which the units are separated by intervals greater than in close order.

Overhead fire: Fire that is directed over the heads of friendly troops.

Pace: Thirty inches; the length of the full step in quick time.

Point of rest: The point at which a formation begins. Specifically, the point toward which units are aligned in successive movements.

Position in readiness: In attack, is a position in which the troops are ready to move to the attack but are held until more accurate information of the enemy may be secured.

In defense, is a position selected and occupied by the defensive troops.

Ranging fire: Has for its object the determination of the verification of the firing data when no range-finding instrument is available.

Rank: A line of men placed side by side.

Right: The right extremity or element of a body of troops.

Searching fire: Is that in which the fire of the gun is distributed in the direction of depth.

Squad distance: The distance from the head of the gun mule to the rear of the ammunition cart (10 paces).

The squad or gun squad: The gun squad consists of the corporal and eight privates.

The squad mounted: Consists of the squad plus the gun and ammunition carts, mules, etc.

SYLLABUS OF MACHINE-GUN TRAINING.

(Four weeks, six working days per week.)

The order in which the daily work is taken up can not be precisely prescribed. The following is suggested as a logical arrangement. Variations will suggest themselves to the instructor during the course of instruction. The main point is to have the instruction progressive with as little loss of time as possible in passing from one subject to another.

DUTIES OF OFFICERS.

Captain—General supervision of all instruction.

Senior lieutenant—Instruction of scout and agents of communication.

Next lieutenant—Instruction of gun squads.

Next lieutenant—Instruction of signal men.

Next lieutenant—Animals, stables, and transportation. Range taker.

Junior lieutenant—Assistant to other officers; familiarizes himself thoroughly with their work.

Schools for officers and noncommissioned officers.—Preparation for succeeding day's work.

Specialists.—All men of machine-gun companies must thoroughly understand the mechanics and the service of the gun, so that they may be readily interchanged and the fire of the gun may not be interrupted by casualties. To this end all specialists attend, during the first two weeks, the drills of the gun squads in the forenoon, during the second two weeks in the afternoon, and during such other hours as they are not receiving instruction in their special duties. The latter are given in detail under heading "Specialists."

GUN SQUADS.

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Semaphore signals.....		$\frac{1}{2}$		$\frac{1}{2}$			$\frac{1}{2}$	
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Auxiliary aiming points.....								
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Concealment of guns in position.....								
Tactical exercises, followed by detailed criticism, moving guns across country by hand in various formations.....								

GUN SQUADS.

	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Hours.
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																	5
																	9
																	1
	$\frac{1}{2}$		$\frac{1}{2}$			$\frac{1}{2}$		$\frac{1}{2}$			$\frac{1}{2}$		$\frac{1}{2}$		$\frac{1}{2}$		1
																	5
																	5
																	1
																	2
																	1
																	3
																	2
																	3
																	1
																	1
																	1
																	4
																	1
																	1
	1	2	1														6
	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$														$\frac{1}{2}$
	1	1	1														4
	2	2															3
	1		$\frac{1}{2}$														8
		$\frac{1}{2}$	1														1
																	2
																	2
																	2
	$\frac{1}{2}$																$\frac{1}{2}$
																	1
																	4
																	3
																	2
																	6
																	8
																	4
											2	2	2	3	2		11

GUN SQUADS—Continued.

Subjects.	1	2	3	4	5	6	7	8
Lecture—Contents of guns and ammunition carts.								
Machine-gun emplacements.								
Night firing.								
Lecture—Indirect fire.								
Indirect fire.								
Lectures—Saturdays.								
Tests.								
Schools—Noncommissioned officers.	1	1	1	1	1		1	1
Schools—Officers.	1	1	1	1	1		1	1

SPECIALISTS.

Signalmen—Visual training and estimating distance.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$
Selections of signal station—Background.	1	1					1	1
Signaling—Semaphore.	1	1	1	1	1		1	1
Signaling—Wigwag, short and long distance.	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	$1\frac{1}{2}$		$1\frac{1}{2}$	$1\frac{1}{2}$
Signaling—Arm and hand.				$\frac{1}{2}$				
Service buzzer—Description and care.			1	1			$\frac{1}{2}$	$\frac{1}{2}$
Laying wire and establishing stations.					$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$
Sending and receiving messages.					$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$
Range taker—Construction and care of instrument.	2							
Setting up instrument—Methods of adjustment.	2	2	1	1			1	1
Practical exercises in range finding.		2	1	1	1		1	1
Preparation of range cards—Attack.			2	2	1		1	1
Preparation of range cards—Defense.					2		2	1
Scouts and agents—Visual training and estimating distance.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$			$\frac{1}{2}$
Selection of signal station—Background.			1		1		$\frac{1}{2}$	$\frac{1}{2}$
Signaling—Semaphore.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$
Signaling—Wigwag, short and long distance.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$			1	
Signaling—Arm and hand.		$\frac{1}{2}$					$\frac{1}{2}$	
Writing messages and reports.		1					$\frac{1}{2}$	
Verbal messages.			$\frac{1}{2}$					
Orderly and messenger duties.	1			$\frac{1}{2}$				
Route sketches.				1	1			1
Lecture—Principles of patrolling.							1	
Lecture—Orders to and equipment of leader.							1	
Practical patrolling—Reports.								1
Stable management, stable rules, picket lines.	$1\frac{1}{2}$							

GUN SQUADS—Continued.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Hours.
										1						1
										3	3		4			10
											1					1
											1					1
												4		4		8
																4
																12
1	1	1		1	1	1	1	1		1	1	1	1	1		20
1	1	1		1	1	1	1	1		1	1	1	1	1		20

SPECIALISTS.

$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$			1		1			1		1		1		10
																2
1	1	1		1	1	1	1	1		1	1	1	1	1		20
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$		1		1		$1\frac{1}{2}$			1		1			20
		1						$\frac{1}{2}$					1			3
																2
$\frac{1}{2}$	$\frac{1}{2}$			$\frac{1}{2}$	1	$\frac{1}{2}$	1			$\frac{1}{2}$	1	$\frac{1}{2}$	$\frac{1}{2}$			8
$\frac{1}{2}$	$\frac{1}{2}$									$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$			5
																2
1	1	1														11
1	1	1														10
1	1	1														9
1	1	1														8
	$\frac{1}{2}$							$\frac{1}{2}$					$\frac{1}{2}$			$5\frac{1}{2}$
											$\frac{1}{2}$			$\frac{1}{2}$		2
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$		10
1		1					1			1		1		1		10
										$\frac{1}{2}$						2
		$\frac{1}{2}$					$\frac{1}{2}$									3
	$\frac{1}{2}$												$\frac{1}{2}$			2
$\frac{1}{2}$											$\frac{1}{2}$		$\frac{1}{2}$			3
		1					1		1		1		1			9
																1
																1
1	$1\frac{1}{2}$						1				1		1			$9\frac{1}{2}$

SPECIALISTS—Continued.

Subjects.	1	2	3	4	5	6	7	8
Care of animals, grooming, feeding, watering.		1	1					
Sick animals, shoeing.				1	1			$\frac{1}{2}$
Saddling, blanket, saddle, cinching, biting.							$\frac{1}{2}$	$\frac{1}{2}$
Drivers—								
Stable management, rules, picket lines.	$1\frac{1}{2}$	1	1	1	1		1	
Care of animals, grooming, feeding, watering.	1	1	1	1	1			1
Sick animals, shoeing.	1	1	1	1	1			
Adjustment of harness, practical driving.	$\frac{1}{2}$	1	1	1	1			

SPECIALISTS—Continued.

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Hours.
						1										$2\frac{1}{2}$
		$\frac{1}{2}$									$\frac{1}{2}$					3
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$						$\frac{1}{2}$								4
	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$			$\frac{1}{2}$					$\frac{1}{2}$				$3\frac{1}{2}$
				1						1						$8\frac{1}{2}$
					1						1					8
1		1				1		1				1		1		11
	1					1							1			$7\frac{1}{2}$

PART I.

DRILL.

SECTION I.—INTRODUCTION.

1. A Drill Regulation prescribes fixed movements and gives the basic principles which govern the instruction and training necessary for the maneuvering of troops in peace and war. Instruction is imparted by means of explanations, lectures, fixed drills, or ceremonies, and by field and combat exercises.

2. The object of fixed movements (drills and ceremonies) is to teach a methodical and systematic manner in the performance of duty and to insure prompt obedience to commands and orders. Therefore, all drills should be executed with great attention to detail.

The personnel must be so thoroughly drilled that in the excitement of action the duties will be performed as a matter of second nature.

3. Field and combat exercises are for the purpose of illustrating the application of given principles to concrete cases in the field. In these exercises assumed situations are employed, each exercise being conducted as it would be under the actual war conditions assumed, and concluded with a discussion on the ground of the exercises and principles involved. These exercises serve as a guide as to the best way of dealing with the usual problems which may arise. But every problem which arises has its own best solution, and this solution must be evolved by the officer on the spot. His success will depend upon the extent to which he has prepared himself by previous thought and study and by previous practice in the solution of similar problems.

Practice by officers in making proper dispositions to meet the requirements and developments of tactical situations is the best training for service in war.

4. Instruction in peace must therefore be conducted with a view, first, of drilling the personnel thoroughly in their habitual duties; second, of affording officers and men practice and experience in dealing with the situations and difficulties apt to arise in campaign.

In order that this instruction will follow a definite and logical plan unit commanders should prepare weekly or monthly programs of instruction for their organization.

5. It is essential that the machine-gun officers possess a certain amount of mechanical ability, be resourceful, have plenty of initiative, be thoroughly familiar with the Infantry Drill and Field Service Regulations, and understand the application of combat principles to concrete cases on the battle field.

6. Officers should be trained to think quickly and logically and to assume responsibilities unhesitatingly. Errors of judgment should always be pointed out by the proper commanders, but such errors should not be criticized harshly, as such criticism causes timidity and consequent inaction, which are generally more productive of harm than is misdirected zeal.

7. It is the duty of all machine-gun commanders to impart instruction in accordance with the principles announced herein. The means employed should conform to the spirit of these regulations, but in the application of given principles to the solution of practical problems the methods prescribed are to be taken as guides only. Great latitude should be allowed in adapting these methods to the peculiar conditions of different cases, and subordinates should be encouraged in every way possible to exercise their skill and ingenuity in solving the problems which present themselves in service.

On the one hand, uniformity of mechanisms and commands is requisite, in order that the efficiency of instructed personnel may be uninterrupted, due to the differing opinions of changing unit commanders, and that reserves returning to the ranks may fulfill important duties from the beginning of their renewed service. On the other hand, no progress toward improved methods is possible without study and test of suggested changes and variations.

To secure the objects first mentioned the methods, mechanisms, and commands prescribed herein will be habitually practiced. To develop ideas regarding improvements of matériel and methods officers will be encouraged to investigate, to develop and to report upon suggestions from any source for the improvement of efficiency, with a view to their adoption by the proper authority. But such investigations will not be permitted to interfere with proficiency in prescribed methods.

8. A progressive order should be followed in all instruction. The annual course of instruction should commence with the smallest unit and proceed to the larger ones in succession, culminating in the field maneuvers.

9. The efficiency of an instructor is measured not only by his knowledge of his subject but also by his ability to hold the attention of those whom he is endeavoring to instruct. When the men lose interest and their attention wanders, continuation of the exercise is useless. *Hence short and frequent drills are better than long ones, and effort must be made to vary the exercises so as to avoid monotony.*

10. The instructor maintains a military bearing and, by a quiet, firm demeanor, sets a proper example to the men. Faults are corrected gradually, without nagging or shouting.

11. Officers and noncommissioned officers of each grade are frequently practiced in the duties of the next higher grade or command.

12. *Thorough training of the individual soldier is the basis of efficiency. Great precision and attention to detail are essential in this instruction in order that the soldier may acquire that habit of implicit obedience to orders and of accurate performance of his individual duties which is indispensable in combined training.*

13. If all the individuals of a company, including the officers, are thoroughly trained, a comparatively short period of work in formal company drills, occupation of positions, marches, etc., with the company as a whole will suffice to produce an efficient organization for field service. On the other hand, no amount of drill of a company as a whole is likely to produce an efficient organization if its members are not thoroughly instructed as individuals.

14. Instruction of the gun squad as a whole will not be taken up to the exclusion of individual training until the men are thoroughly proficient in the nomenclature and operation of all those parts of the guns, instruments, and other matériel which the men are called upon to handle in actual firing.

It will often be the case that sections and platoons will be detached from their companies and required to act upon their own resources. *It is therefore important that special emphasis be laid upon the instruction of sections and platoons as independent units.*

15. So far as concerns the enlisted personnel, the most important element of a company's efficiency on the battle field is its fire discipline. The basis of good fire discipline, as of all other matters, is thorough individual instruction, and it can be secured and maintained only by constant and vigorous drills and other exercises. To this end gun squads will be given daily such exercises as will serve to fix their attention and cultivate their dexterity.

Efficient gun squads can not be improvised. The duties of gunners and the manual dexterity required for their performance are easily forgotten.

16. Instruction will be so arranged that during drill hours neither men nor animals will be idle.

17. Guns, carts, harness, and other matériel will be properly cleaned, put in order, and inspected by an officer as soon as practicable after each drill or exercise. When stables are held after drill, such men as may be needed will be detailed to clean and place the matériel in proper order.

18. Both morning and afternoon hours will be utilized for instruction, sufficient time being allowed for the police of barracks, stables, and grounds and for the care of the personal equipments and effects of the men. All work should normally be done under the immediate direction of noncommissioned officers and under the supervision of officers.

TRAINING OF OFFICERS.

19. Responsibility for the training of officers rests upon regimental and battalion commanders.

20. Among the requisites essential in the training of a machine-gun officer are the following:

Practical understanding of the functions of all parts of the matériel. In addition, company officers must be able to dismount and to assemble each part of the mechanism without reference to handbooks and without assistance other than the necessary labor, and to perform with skill all the duties required in the qualification of gunners.

Thorough knowledge of animals under the saddle and in draft; how best to ride, control, and manage them in order to conserve their strength; how to train, care for, and condition them in order to secure obedience, handiness, and endurance.

Expertness in the reconnaissance, selection, and occupation of positions.

Whenever a position is to be chosen a definite tactical situation should be stated that will invariably recognize the primary purpose of machine-gun fire.

Facility in the direction, conduct, and observation of fire.

SECTION II.—ORDERS, COMMANDS, AND SIGNALS.

21. COMMANDS are employed in drill at attention. Otherwise, either a *command*, *signal*, or *order* is employed, as best suits the occasion, or one may be used in conjunction with another.

22. Signals should be freely used in instruction, in order that officers and men may readily know them. In making signals the saber, rifle, pistol, or headdress may be held in the hand.

23. Officers and men fix their attention at the first word of command, the first note of the bugle or whistle, or the first motion of the signal. A signal includes both the preparatory command and the command of execution; the movement commences as soon as the signal is understood, unless otherwise prescribed.

24. Except in movements executed at *attention*, commanders or leaders of subdivisions repeat orders, commands, or signals whenever such repetition is deemed necessary to insure prompt and correct execution.

Officers, battalion noncommissioned staff officers, platoon and section leaders, guides, and buglers are equipped with whistles.

The major and his staff will use a whistle of distinctive tone; the captain and company buglers, a second whistle of distinctive tone; and platoon and section leaders, a third whistle of distinctive tone.

25. Prescribed signals are limited to such as are essential as a substitute for the voice under conditions which render the voice inadequate.

Before or during an engagement special signals may be agreed upon to facilitate the solution of such special difficulties as the particular situation is likely to develop, but it must be remembered that simplicity and certainty are indispensable qualities of a signal.

ORDERS.

26. In these regulations an *order* embraces instruction or directions given orally or in writing in terms suited to the particular occasion and not prescribed herein.

27. In action, the preliminary disposition of machine-gun units and their subsequent control is by means of orders or instructions issued verbally on the ground.

If practicable, the subordinate leaders may be assembled at a convenient place from which the situation and plan can be explained. Clear and concise instructions are given as to the part that each unit is to take in the combat.

28. Orders should be simple and convey definite ideas. When issuing orders a commander does not encroach upon the functions of a subordinate by prescribing details of execution unless it be necessary.

The commander prescribes what is to be done, the details of execution being left to the subordinate. It is only by constant study and practice that a commander becomes proficient in issuing simple verbal orders. Frequently a drill regulation command will be the simplest means of conveying the will of the commander to the troops. When this is so, the drill regulation command should be used.

COMMANDS.

29. In these regulations a *command* is the will of the commander expressed in the phraseology prescribed herein.

30. There are two kinds of commands:

The *preparatory* command, such as *forward*, indicates the movement that is to be executed.

The *command of execution*, such as MARCH, or HALT, causes the execution.

Preparatory commands are distinguished by italics, those of *execution* by capitals.

Where it is not mentioned in the text who gives the commands prescribed, they are to be given by the commander of the unit concerned.

The *preparatory* command should be given at such interval of time before the command of *execution* as to admit of being properly understood; the command of execution should be given at the instant the movement is to commence.

The tone of command is animated, distinct, and of a loudness proportioned to the number of men for whom it is intended.

Each *preparatory* command is enunciated distinctly, with rising inflection at the end, and in such manner that the command of *execution* may be more energetic.

The command of execution is firm in tone and brief.

31. Majors and commanders of units smaller than a battalion repeat such commands of their superiors as are to be executed by their units, facing their units for that purpose. The battalion is the largest unit that executes a movement at the command of execution of its commander.

32. When giving commands to troops it is usually best to face toward them.

Indifference in giving commands must be avoided, as it leads to laxity in execution. Commands should be given with spirit at all times.

BUGLE SIGNALS.

33. The authorized bugle signals are published in Part V of these regulations.

The following bugle signals may be used off the battle field when not likely to convey information to the enemy:

ATTENTION: Troops are brought to attention.

ATTENTION TO ORDERS: Troops fix their attention.

Forward, MARCH: (Used also to execute quick time from double time.)

Double time, MARCH.

To the rear, MARCH.

HALT.

Assemble, MARCH.

The following bugle signals are used in exceptional cases on the battle field. Their principal uses are in field exercises and practice firing.

Commence firing: Officers charged with fire direction and control open fire as soon as practicable. When given to gun squads the signal is equivalent to FIRE AT WILL.

CEASE FIRING: All gun squads CEASE FIRING at once.

These signals are not used by units smaller than a regiment, except when such unit is independent or detached from its regiment.

WHISTLE SIGNALS.

34. *Attention to orders*: A short blast of the whistle. This signal is used on the march or in combat when necessary to fix the attention of troops, or their commanders or leaders, preparatory to giving commands, orders, or signals.

When the guns are firing, each squad leader suspends firing and fixes his attention at a short blast of his platoon or section leader's whistle. The subsequent commands or signals are repeated and enforced by the squad leader. If a squad leader's attention is attracted by a whistle other than that of his platoon or section leader, or if there are no orders or commands to convey to his squad, his gun resumes firing at once.

SUSPEND FIRING: A long blast of the whistle.

ALL OTHER WHISTLE SIGNALS ARE PROHIBITED.

ARM SIGNALS.

35. The following arm signals are prescribed. In making signals either arm may be used. Officers who receive signals on the firing line "repeat back" at once to prevent misunderstanding.

Forward, MARCH: Carry the hand to the shoulder; straighten and hold the arm horizontally, thrusting it in direction of march.

This signal is also used to execute quick time from double time.

Halt: Carry the hand to the shoulder; thrust the hand upward and hold the arm vertically.

Double time, MARCH: Carry the hand to the shoulder; rapidly thrust the hand upward the full extent of the arm several times.

Squads right, MARCH: Raise the arm laterally until horizontal; carry it to a vertical position above the head and swing it several times between the vertical and horizontal positions.

Squads left, MARCH: Raise the arm laterally until horizontal; carry it downward to the side and swing it several times between the downward and horizontal positions.

Squads right about, MARCH (if dismounted), or *To the rear, MARCH* (if mounted): Extend the arm vertically above the head; carry it laterally downward to the side and swing it several times between the vertical and downward positions.

To change direction, or column right (left), MARCH: The hand on the side toward which the change of direction is to be made is carried across the body to the opposite shoulder, forearm horizontal; then swing in a horizontal plane, arm extended, pointing in the new direction.

As skirmishers, MARCH: Raise both arms laterally until horizontal.

As skirmishers, guide center, MARCH: Raise both arms laterally until horizontal; swing both simultaneously upward until vertical and return to the horizontal; repeat several times.

As skirmishers, guide right (left), MARCH: Raise both arms laterally until horizontal; hold the arm on the side of the guide steadily in the horizontal position; swing the other upward until vertical and return it to the horizontal; repeat several times.

Assemble, MARCH: Raise the arm vertically to its full extent and describe horizontal circles. (If *Action* has been given, at this signal the carts rejoin the "Firing Company.")

Platoon: Extend the arm horizontally toward the platoon leader; describe small circles with the hand.

Section: Extend the arm horizontally toward the platoon leader and move the arm through a small vertical arc.

Squads: Extend the arm horizontally toward the platoon leader; swing the hand up and down from the wrist.

Right (left) by platoon, MARCH: Point at the right (left) platoon leader; signal *platoon*, then *FORWARD*.

Right (left) by section, MARCH: Point at the right (left) section; signal *section*, then *FORWARD*.

Right (left) by squad, MARCH: Point at right (left) squad; signal *squad*, then *FORWARD*.

Right (left) front into line: Extend the arm vertically and describe several large vertical circles on the right (left) side.

On right (left) into line, MARCH: Signal *column right (left)*; then *left (right) front into line*.

Right (left) into line: Signal a change of direction to the right (left), followed by describing small circles with the hand while the arm is extended to the right (left).

By the right flank (being in close line): Signal *squads right (left)*, *MARCH*.

The signals *platoon*, *section*, and *squad* are intended primarily for communication between the captain, platoon, section, and squad leaders. The signal *platoon*, *section*, or *squad* indicates that the platoon commander is to cause the signal shown to be executed by platoon, section, or squad.

ARM SIGNALS FOR CONTROLLING FIRE.

36. Action: Strike with closed fist in direction indicated. This signal is used to put guns into firing positions as described in par. 664.

Out of action: Strike the open palm of one hand with the closed fist of the other hand. (Signal indicates gun is out of action or not ready to fire.)

Range or change elevation: To announce *range* extend the arm toward the leaders or men for whom the signal is intended, fist closed; by keeping the fist closed battle sight is indicated; by opening and closing the fist, expose thumb and fingers to a number equal to the hundreds of yards; to add 50 yards describe a short horizontal line with the forefinger. *To change elevation* the fire controller indicates the new range. The fire observer indicates the amount of increase or decrease by pointing upward for increase, downward for decrease, and exposing the number of fingers.

What range are you using? or What is the range? Extend the arms toward the person addressed, one hand open, palm to the front, resting on the other hand, fist closed.

Are you ready? or I am ready: Raise the hand, fingers extended and joined, palm toward the person addressed.

Commence firing: Move the arm extended in full length, hand palm down, several times through a horizontal arc in front of the body.

Fire faster: Execute rapidly the signal "Commence firing."

Fire slower: Execute slowly the signal "Commence firing."

Suspend firing: Raise and hold the forearm steadily in a horizontal position in front of the forehead, palm of the hand to the front.

Cease firing: Raise the forearm as in *suspend firing* and swing it up and down several times in front of the face.

Distributed or traversing fire: Extend arm to the front, palm to the left, and wave the hand up and down with a chopping motion, at the same time moving the hand and arm from right to left, or left to right, as it is desired that the fire be distributed.

Searching fire, — mils up: Extend arm to the front, describe a vertical circle in front of the body with the arm extended. Indicate mils as in *Up mils*.

Searching fire, — mils down: Extend arm to the front, describe a vertical circle in front of the body. Indicate mils.

To swing cone of fire to the right or left: Extend the arm in full length to the front, palm to the right (left); swing the arm to right (left), and point in the direction of the new target.

Up — mils: Extend the arm downward, with palm to the front, and wave upward with a full swing of the arm. Indicate number of mils by thrusting closed fist to the front once for each 5 mils, and upward once for each single mil. Thus, for 4 mils thrust upward four times; for 6 mils thrust to the front once and upward once.

Down — mils: Extend arm to the front, palm down, and wave downward. Indicate number of mils by thrusting closed fist to the front once for each 5 mils, and downward once for each single mil.

To right — mils: Extend arm to the front and wave to the right. Indicate mils as in *Up*.

To left — mils: Same as above, substituting *left* for *right*.

37. For communication between the firing line and the reserve or commander in the rear, the subjoined signals are prescribed and should be memorized. In the absence of signal flags, the headdress or other substitute may be used. In transmission of signals their concealment from the enemy's view should be insured.

Letter of alphabet.	If signaled from the rear to the firing line.	If signaling from the firing line to the rear.
AM	Ammunition going forward.	Ammunition required.
CCC	Charge (mandatory at all times).	Am about to charge if no instructions to the contrary.
CF	Cease firing.	Cease firing.
DT	Double time.	Double time, or "Rush."
F	Commence firing.	Commence firing.
FL	Artillery fire is causing us losses.	Artillery fire is causing us losses.
G	Move forward.	Preparing to move forward.
HHH	Halt.	Halt.
K	Negative.	Negative.
LT	Left.	Left.
O	What is the (RN., etc.)? Interrogatory (Ardois and semaphore only, all others, . . . — . . .).	What is the (RN., etc.)? Interrogatory.
P	Affirmative.	Affirmative.
R	Acknowledgment.	Acknowledgment.
RN	Range.	Range.
RT	Right.	Right.
SSS	Support going forward.	Support needed.
SUF	Suspend firing.	Suspend firing.
T	Target.	Target.


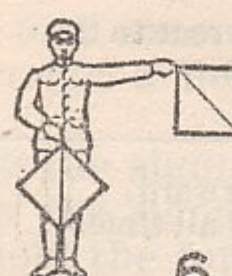

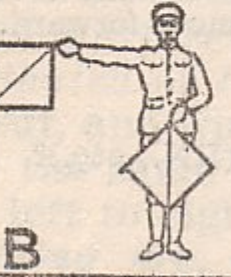
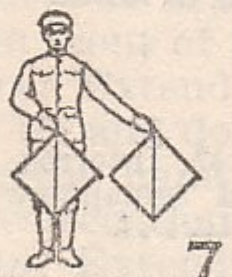










SIGNALS FOR CONTROL OF FIRE.

C	Direction correct.
OK	Correct range.
U	Fire unobserved
Q	Fire observed, uncertain.
UP (followed by number of mils) as (UP f-o-u-r).	Fire observed, correction to the target is UP — mils.
DN (followed by number of mils) as (DN f-o-u-r).	Fire observed, correction to the target is DOWN — mils.




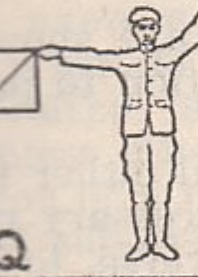










SECTION III.—GENERAL RULES FOR DRILLS AND FORMATIONS.

38. For convenience in designation herein, the terms *dismounted* and *mounted* are used. The organization is considered *mounted* when the animal transportation prescribed as part of the equipment of the organization is present. It is *dismounted* when the individual mounted men are *dismounted* and none of the animal transportation is present.

TWO-ARM SEMIPHORE CODE.

<p>ERROR</p>  <p>A I</p>	 <p>F 6</p>	<p>NEGATIVE</p>  <p>K</p>
 <p>B 2</p>	 <p>G 7</p>	<p>PREPARATORY</p>  <p>L</p>
 <p>C 3</p>	 <p>H 8</p>	 <p>M</p>
 <p>D 4</p>	 <p>I 9</p>	<p>ANNULLING</p>  <p>N</p>
 <p>E 5</p>	 <p>J 0</p>	<p>INTERROGATORY</p>  <p>O</p>

TWO-ARM SEMIPHORE CODE.

<p>AFFIRMATIVE</p>  <p>P</p>	 <p>U</p>	 <p>Z</p>
 <p>Q</p>	 <p>V</p>	<p>ATTENTION</p> 
<p>ACKNOWLEDGE</p>  <p>R</p>	 <p>W</p>	<p>INTERVAL</p> 
 <p>S</p>	 <p>X</p>	<p>NUMERALS (FOLLOW)</p> 
 <p>T</p>	 <p>Y</p>	

When the *preparatory* command consists of more than one part, its elements are arranged as follows:

1. For movements to be executed successively by the subdivisions or elements of an organization:
 - (a) Description of the movement.
 - (b) How executed, or on what element executed.
2. For movements to be executed simultaneously by the subdivision of an organization:

- (a) The designation of the subdivisions.
- (b) The movement to be executed.

39. Cross references to paragraphs herein are shown thus: (87), the number in parentheses calling attention to paragraph number 87 of these regulations.

40. Movements that may be executed toward either flank are explained as toward but one flank, it being necessary to substitute the word "left" for "right," and the reverse, to have the explanation of the corresponding movement toward the other flank. The commands are given for the execution of the movements toward either flank. The substituted word of the command is placed within parentheses.

41. Any movement may be executed either from the halt or when marching, unless otherwise prescribed. If at a halt, the command for movements involving marching need not be prefaced by *forward*, as: 1. *Column right (left)*, 2. MARCH.

42. Any movement not specially excepted may be executed in double time.

If at a halt, or if marching in quick time, the command *double time* precedes the command of execution.

43. In successive movements executed in double time the leading or base unit marches in *quick time* when not otherwise prescribed; the other units march in *double time* to their places in the formation ordered and then conform to the gait of the leading or base unit. If marching in double time, the command *double time* is omitted. The leading or base unit marches in *quick time*, the other units continue at double time to their places in the formation ordered, and then conform to the gait of the leading or base unit.

44. To hasten the execution of a movement begun in quick time, the command: 1. *Double time*, 2. MARCH, is given. The leading or base unit continues to march in quick time, or re-

mains at a halt if already halted; the other units complete the execution of the movement in double time and then conform to the gait of the leading or base unit.

45. To stay the execution of a movement when marching, for the correction of errors, the command: 1. *In place*, 2. HALT, is given. All halt and stand fast, without changing the position of the pieces. To resume the movement the command: 1. *Resume*, 2. MARCH, is given.

46. To revoke a preparatory command, or, being at a halt, to begin anew a movement improperly begun, the command: *As You Were*, is given, at which the movement ceases and the former position is resumed.

47. Unless otherwise announced, the guide of a company, or subdivision of a company, in line is *right*; of a battalion in line or line of subdivisions or of a deployed line, *center*; of a rank in column of squads, toward the side of the guide of the company.

To march with guide other than as prescribed above, or to change the guide: *Guide (right, left, or center)*.

In successive formations into line the guide is toward the point of rest; in platoons or larger subdivisions it is so announced.

The announcement of the guide, when given in connection with a movement, follows the command of execution for that movement.

48. The turn on the moving pivot is used by subdivisions of a column in executing changes of direction. Elements other than the base unit, when mounted, move at a double time.

49. Partial changes of direction may be executed:

By interpolating in the preparatory command the word *half*, as *Column half right (left)*, or *Right (left) half turn*. A change of direction of 45 degrees is executed.

By the command: *INCLINE TO THE RIGHT (LEFT)*, the guide or guiding element moves in the indicated direction and the remainder of the command conforms. This movement effects slight changes of direction.

50. The designations, line of sections (line of platoons), (line of companies), refer to the formations in which the sections, each in column of squads, are in line.

The line refers to the formation in which the squads are in line with an interval of about 10 yards between squads.

In column of subdivisions the guide of the leading subdivision is charged with the step and direction; the guides in rear preserve the trace, step, and distance.

51. The squad, the section, the platoon, the company, and the battalion, both mounted and dismounted, execute the rests, eyes right or left, the facings, the salutes, march in quick and double time, mark time, execute the half step, side step, back step, and change step in the same manner and by the same commands as given in the school of the soldier (60). The halt is executed (82) by substituting the designation of the unit, as: 1. *Battalion*, 2. *HALT*.

52. The battalion, company, platoon, and section, all resume attention, oblique, resume the direct march, and preserve alignment, and in addition the battalion and the company dismounted take intervals and distances and assemble in the same manner and by the same commands, substituting in the command the words "section," "platoon," "company," or "battalion" for "squad," as given for the squad dismounted.

The same rule applies to detachments, details, etc.

53. To insure uniformity of interval between files when falling in, and in alignments, each man places the palm of the left hand upon the hip, fingers pointing downward. In the first case the hand is dropped by the side when the next man on the left has his interval; in the second case, at the command *Front*.

54. The posts of officers, noncommissioned officers, etc., in the various formations of the company and battalion are shown in plates under the various headings. For the position of the machine-gun company in the Infantry regiment see the Infantry Drill Regulations.

In all changes from one formation to another involving a change of post on the part of any of these, posts are promptly taken by the most convenient route as soon as practicable after the command of execution for the movement; officers and noncommissioned officers who have prescribed duties in connection with the movement ordered take their new posts when such duties are completed.

As instructors, officers and noncommissioned officers go wherever their presence is necessary. As file closers it is their duty

to rectify mistakes and insure steadiness and promptness in the ranks.

55. The staff of an officer forms in single rank 3 paces in rear of him, the right of the rank extending 1 pace to the right of a point directly in rear of him. Members of the staff are arranged in order from right to left as follows: General staff officers, adjutant, aids, other staff officers, arranged in each classification in order of rank, the senior on the right. The flag of a general officer and the orderlies are 3 paces in rear of the staff, the flag on the right. When necessary to reduce the front of the staff and orderlies each line executes *twos right* or *fours right*, and follows the commander.

When not otherwise prescribed staff officers draw and return saber with their chief.

56. In making the about, an officer, mounted, habitually turns to the left.

When the commander faces to give commands the staff, flag, and orderlies do not change position.

57. For ceremonies, such of the noncommissioned staff officers as are dismounted are formed 5 paces in rear of the color, in order of rank from right to left. In column of squads they march as file closers.

58. Other than for ceremonies, noncommissioned staff officers and orderlies accompany their immediate chiefs unless otherwise directed. If mounted, the noncommissioned staff officers are ordinarily posted on the right or at the head of the orderlies.

59. In all formations and movements a noncommissioned officer commanding a platoon or company takes the same post as an officer in a like situation.

SECTION IV.—SCHOOL OF THE SOLDIER.

(Dismounted.)

60. The instructor explains briefly each movement, first executing it himself, if practicable. He requires the recruits to take the proper positions unassisted and does not touch them for the purpose of correcting them, except when they are unable to correct themselves. He avoids keeping them too long at the

same movement, although each should be understood before passing to another. He exacts by degrees the desired precision and uniformity.

61. In order that all may advance as rapidly as their abilities permit, the recruits are grouped according to proficiency as instruction progresses. Those who lack aptitude and quickness are separated from the others and placed under experienced drill masters.

62. For preliminary instruction a number of recruits, usually not exceeding three or four, are formed as a squad in single rank.

POSITION OF THE SOLDIER, OR ATTENTION.

63. Heels on the same line and as near each other as the conformation of the man permits.

Feet turned out equally and forming an angle of about 45 degrees.

Knees straight, without stiffness.

Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

Arms and hands hanging naturally, thumb along the seam of the trousers.

Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical; eyes straight to the front.

Weight of the body resting equally upon the heels and balls of the feet.

THE RESTS.

64. Being at a halt, the commands are: FALL OUT; REST; AT EASE; and 1. *Parade*, 2. REST.

At the command *fall out* the men may leave the ranks, but are required to remain in the immediate vicinity. They resume their former places at attention at the command FALL IN.

At the command *rest* each man keeps one foot in place, but is not required to preserve silence or immobility.

At the command *at ease* each man keeps one foot in place and is required to preserve silence, but not immobility.

65. 1. *Parade*, 2. REST. Carry the right foot 6 inches straight to the rear, left knee slightly bent; clasp the hands, without

constraint, in front of the center of the body, fingers joined, left hand uppermost, left thumb clasped by the thumb and forefinger of the right hand; preserve silence and steadiness of position.

66. To resume the attention: 1. *Squad*, 2. ATTENTION. The men take the position of the soldier.

EYES RIGHT OR LEFT.

67. 1. *Eyes*, 2. RIGHT (LEFT), 3. FRONT.

At the command *right* turn the head to the right oblique, eyes fixed on the line of eyes of the men in, or supposed to be in, the same rank. At the command *front* turn the head and eyes to the front.

FACINGS.

68. To the flank: 1. *Right (Left)*, 2. FACE.

Raise slightly the left heel and right toe; face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot; place the left foot by the side of the right. *Left face* is executed on the left heel in the corresponding manner.

Right (left) half face is executed similarly, facing 45 degrees.

"To face in marching" and advance turn on the ball of either foot and step off with the other foot in the new line of direction; to face in marching without gaining ground in the new direction turn on the ball of either foot and mark time.

69. To the rear: 1. *About*, 2. FACE.

Carry the toe of the right foot about a half-foot length to the rear and slightly to the left of the left heel, without changing the position of the left foot; face to the rear, turning to the right on the left heel and right toe; place the right heel by the side of the left.

SALUTE WITH THE HAND.

70. 1. *Hand*, 2. SALUTE.

Raise the right hand smartly till the tip of the forefinger touches the lower part of the headdress above the right eye, thumb and fingers extended and joined, palm to the left, forearm inclined at about 45 degrees, hand and wrist straight; at the

same time look toward the person saluted. (2) Drop the arm smartly by the side.

For rules governing salutes, see "Honors and salutes," paragraphs 619-637.

STEPS AND MARCHINGS.

71. All steps and marchings executed from a halt, except right step, begin with the left foot.

72. The length of the full step in quick time is 30 inches, measured from heel to heel, and the cadence is at the rate of 120 steps per minute.

The length of the full step in double time is 36 inches; the cadence is at the rate of 180 steps per minute.

The instructor, when necessary, indicates the cadence of the step by calling *one, two, three, four*, or *left, right*, the instant the left and right foot, respectively, should be planted.

73. All steps and marchings and movements involving march are executed in *quick time* unless the squad be marching in *double time*, or *double time* should be added to the command; in the latter case *double time* is added to the preparatory command. Example: 1. *Squad right, double time*, 2. MARCH. (School of the squad.)

QUICK TIME.

74. Being at a halt, to march forward in quick time: 1. *Forward*, 2. MARCH.

At the command *forward*, shift the weight of the body to the right leg, left knee straight.

At the command *march*, move the left foot smartly straight forward 30 inches from the right, sole near the ground, and plant it without shock; next, in like manner, advance the right foot and plant it as above; continue the march. The arms swing naturally.

75. Being at a halt, or in march in quick time, to march in double time: 1. *Double time*, 2. MARCH.

If at a halt, at the first command, shift the weight of the body to the right leg. At the command *march*, raise the forearms, fingers closed, to a horizontal position along the waistline; take up an easy run with the step and cadence of double time, allowing a natural swinging motion to the arms.

If marching in quicktime, at the command *march* given as either foot strikes the ground, take one step in quick time and then step off in double time.

76. To resume the quick time: 1. *Quick time*, 2. MARCH.

At the command *march*, given as either foot strikes the ground, advance and plant the other foot in double time; resume the quick time, dropping the hands by the sides.

TO MARK TIME.

77. Being in march: 1. *Mark time*, 2. MARCH.

At the command *march*, given as either foot strikes the ground, advance and plant the other foot; bring up the foot in rear and continue the cadence by alternately raising each foot about 2 inches and planting it on line with the other.

Being at a halt, at the command *march*, raise and plant the feet as described above.

THE HALF STEP.

78. 1. *Half step*, 2. MARCH.

Take steps of 15 inches in quick time, 18 inches in double time.

79. FORWARD, HALF STEP, HALT, and MARK TIME may be executed one from the other in quick or double time.

To resume the full step from half step or mark time: 1. *Forward*, 2. MARCH.

SIDE STEP.

80. Being at a halt or mark time: 1. *Right (Left) step*, 2. MARCH.

Carry and plant the right foot 15 inches to the right, bring the left foot beside it, and continue the movement in the cadence of quick time. The side step is used for short distances only and is not executed in double time.

If at order arms the side step is executed *at trail* without command.

BACK STEP.

81. Being at a halt or mark time: 1. *Backward*, 2. MARCH.

Take steps of 15 inches straight to the rear.

The back step is used for short distances only and is not executed in double time.

If at order arms the back step is executed *at trail* without command.

TO HALT.

82. To arrest the march in quick or double time: 1. *Squad*, 2. HALT.

At the command *halt*, given as either foot strikes the ground, plant the other foot as in marching; raise and place the first foot by the side of the other. If in double time, drop the hands by the sides.

TO MARCH BY THE FLANK.

83. Being in march: 1. *By the right (left) flank*, 2. MARCH. At the command *march*, given as the right foot strikes the ground, advance and plant the left foot, then face to the right in marching and step off in the new direction with the right foot.

TO MARCH TO THE REAR.

84. Being in march: 1. *To the rear*, 2. MARCH. At the command *march*, given as the right foot strikes the ground, advance and plant the left foot; turn to the right about on the balls of both feet and immediately step off with the left foot.

If marching in double time, turn to the right about, taking four steps in place, keeping the cadence, and then step off with the left foot.

CHANGE STEP.

85. Being in march: 1. *Change step*, 2. MARCH. At the command *march*, given as the right foot strikes the ground, advance and plant the left foot; plant the toe of the right foot near the heel of the left and step off with the left foot.

The change on the right foot is similarly executed, the command *march* being given as the left foot strikes the ground.

SECTION V.—THE SQUAD.

(Dismounted.)

86. Soldiers are grouped into squads for purposes of instruction, discipline, control, and order.

87. The gun squad proper consists of a corporal and 8 privates. However, for instructional purposes the men are grouped into squads of from 3 to 11 men each.

The movements in the school of the squad are designed to make the squad a fixed unit and to facilitate the control and movement of the company. If the number of men grouped is more than 3 and less than 12 they are formed as a squad of 4 files, the excess above 8 being posted as file closers. If the number grouped is greater than 11, two or more squads are formed and the group is termed a section.

For the instruction of recruits these rules may be modified.

88. The corporal is the squad leader, and when absent is replaced by a designated private. If no private is designated the senior in length of service acts as leader.

The corporal, when in ranks, is posted as the left man in the front rank of the squad, the eighth private takes his place in the file closers.

When the corporal leaves the ranks to lead his squad, his rear-rank man steps into the front rank, and the file remains blank until the corporal returns to his place in ranks, when his rear-rank man steps back into the rear rank.

89. The gun squad is the basic unit of the machine-gun company, hence it should be the endeavor of officers to preserve the integrity of these squads.

Men are taught the necessity of remaining with the squad to which they belong, and in case it is broken up or they become separated therefrom to attach themselves to the nearest squad and section leaders, whether these be of their own or another organization.

90. The squad executes the *halt*, *rests*, *facings*, *steps*, and *marchings* as explained in the school of the soldier.

TO FORM THE SQUAD.

91. To form the squad the instructor places himself 3 paces in front of where the center is to be and commands: FALL IN.

The men assemble at attention, and are arranged by the corporal in double rank, as nearly as practicable in order of height from right to left, each man dropping his left hand as soon as the man on his left has his interval. The rear rank forms with distance of 40 inches.

The instructor then commands: COUNT OFF.

At this command all except the right file executes *eyes right*, and, beginning on the right, the men in each rank count *one, two, three, four*; each man turns his head and eyes to the front as he counts.

ALIGNMENTS.

92. To align the squad, the base file or files having been established: 1. *Right (Left)*, 2. DRESS, 3. FRONT.

At the command *dress*, all men place the left hand upon the hip (whether dressing to the right or left); each man, except the base file, when on or near the new line executes *eyes right*, and, taking steps of 2 or 3 inches, places himself so that his right arm rests lightly against the elbow of the man on his right, and so that his eyes and shoulders are in line with those of the men on his right; the rear-rank men, in addition, cover in file.

The instructor verifies the alignment of both ranks from the right flank and orders up or back such men as may be in rear or in advance of the line; only the men designated move.

At the command *front*, given when the ranks are aligned, each man turns his head and eyes to the front and drops his left hand by his side.

In the first drills the basis of the alignment is established on, or parallel to, the front of the squad; afterwards, in oblique directions.

Whenever the position of the base file or files necessitates a considerable movement by the squad, such movement will be executed by marching to the front or oblique, to the flank or backward, as the case may be, without other command, and at the trail.

93. To preserve the alignment when marching; GUIDE RIGHT (LEFT).

The men preserve their intervals from the side of the guide, yielding to pressure from that side and resisting pressure from

the opposite direction; they recover intervals, if lost, by gradually opening out or closing in; they recover alignment by slightly lengthening or shortening the step; the rear-rank men cover their file leaders at 40 inches.

In double rank, the front-rank man on the right, or designated flank, conducts the march; when marching faced to the flank, the leading man of the front rank is the guide.

TO TAKE INTERVALS AND DISTANCES.

94. Being in line at a halt: 1. *Take interval*, 2. *To the right (left)*, 3. MARCH, 4. *Squad*, 5. HALT.

At the second command the rear-rank men march backward 4 steps and halt; at the command *march* all face to the right and the leading man of each rank steps off; the other men step off in succession, each following the preceding man at 4 paces, rear-rank men marching abreast of their file leaders.

At the command *halt*, given when all have their intervals, all halt and face to the front.

95. Being at intervals, to assemble the squad: 1. *Assemble, to the right (left)*, 2. MARCH.

The front-rank man on the right stands fast, the rear-rank man on the right closes to 40 inches. The other men face to the right, close by the shortest line, and face to the front.

96. Being in line at a halt and having counted off: 1. *Take distance*, 2. MARCH, 3. *Squad*, 4. HALT.

At the command *march*, No. 1 of the front rank moves straight to the front; Nos. 2, 3, and 4 of the front rank and Nos. 1, 2, 3, and 4 of the rear rank, in the order named, move straight to the front, each stepping off so as to follow the preceding man at four paces. The command *halt* is given when all have their distances.

In case more than one squad is in line, each squad executes the movement as above. The guide of each rank of numbers is right.

97. Being at distances, to assemble the squad: 1. *Assemble*, 2. MARCH.

No. 1 of the front rank stands fast; the other numbers move forward to their proper places in line.

THE OBLIQUE MARCH.

98. For the instruction of recruits, the squad being in column or correctly aligned, the instructor causes the squad to face half right or half left, points out to the men their relative positions, and explains that these are to be maintained in the oblique march.

99. 1. *Right (left) oblique*, 2. MARCH.

Each man steps off in a direction 45 degrees to the right of his original front. He preserves his relative position, keeping his shoulders parallel to those of the guide (the man on the right front of the line or column), and so regulates his steps that the ranks remain parallel to their original front.

At the command *halt* the men halt faced to the front.

To resume the original direction: 1. *Forward*, 2. MARCH.

The men half face to the left in marching and then move straight to the front.

If at a *half step* or *mark time* while obliquing, the oblique march is resumed by the commands: 1. *Oblique*, 2. MARCH.

TO TURN ON MOVING PIVOT.

100. Being in line: 1. *Right (left) turn*, 2. MARCH.

The movement is executed by each rank successively and on the same ground. At the second command, the pivot man of the front rank faces to the right in marching and takes the half step; the other men of the front rank oblique to the right until opposite their places in line, then execute a second right oblique and take the half step on arriving abreast of the pivot man. All glance toward the marching flank while at half step and take the full step without command as the last man arrives on the line.

Right (left) half turn is executed in a similar manner. The pivot man makes a half change of direction to the right and the other men make quarter changes in obliquing.

TO TURN ON FIXED PIVOT.

101. Being in line, to turn and march: 1. *Squad right (left)*, 2. MARCH.

At the second command, the right flank man in the front rank faces to the right in marching and marks time; the other front

rank men oblique to the right, place themselves abreast of the pivot and mark time. In the rear rank the third man from the right, followed in column by the second and first, moves straight to the front until in rear of his front-rank man, when all face to the right in marching and mark time; the other number of the rear rank moves straight to the front four paces and places himself abreast of the man on his right. Men on the new line glance toward the marching flank while marking time and, as the last man arrives on the line, both ranks execute *forward, march*, without command.

102. Being in line, to turn and halt: 1. *Squad right (left)*, 2. MARCH, 3. *Squad*, 4. HALT.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men, on arriving at the new line, mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

103. Being in line, to turn about and march: 1. *Squad right (left) about*, 2. MARCH.

At the second command, the front rank twice executes *squad right*, initiating the second *squad right* when the man on the marching flank has arrived abreast of the rank. In the rear rank the third man from the right, followed by the second and first in column, moves straight to the front until on the prolongation of the line to be occupied by the rear rank; changes direction to the right; moves in the new direction until in rear of his front-rank man, when all face to the right in marching, mark time, and glance toward the marching flank. The fourth man marches on the left of the third to his new position; as he arrives on the line both ranks execute *forward, march*, without command.

104. Being in line, to turn about and halt: 1. *Squad right (left) about*, 2. MARCH, 3. *Squad*, 4. HALT.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men, on arriving on the new line, mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

TO FOLLOW THE CORPORAL.

105. Being assembled or deployed, to march the squad without commands the corporal places himself in front of it and commands: FOLLOW ME.

If in line or skirmish line, No. 2 of the front rank follows in the trace of the corporal at about 3 paces; the other men conform to the movements of No. 2, guiding on him and maintaining their relative positions.

If in column, the head of the column follows the corporal.

TO DEPLOY AS SKIRMISHERS.

106. Being in any formation, assembled: 1. *As skirmishers*, 2. MARCH.

The corporal places himself in front of the squad, if not already there. Moving at a run, the men place themselves abreast of the corporal at half-pace intervals, Nos. 1 and 2 on his right, Nos. 3 and 4 on his left, rear-rank men on the right of their file leaders, extra men on the left of No. 4; all men conform to the corporal's gait.

When the squad is acting alone, skirmish line is similarly formed on No. 2 of the front rank, who stands fast or continues the march, as the case may be; the corporal places himself in front of the squad when advancing and in rear when halted.

When deployed as skirmishers the men march at ease, pieces at the trail unless otherwise ordered.

The corporal is the guide when in the line; otherwise No. 2 front rank is the guide.

107. The normal interval between skirmishers is one-half pace, resulting practically in one man per yard of front. The front of a squad thus deployed as skirmishers is about 10 paces.

TO INCREASE OR DIMINISH INTERVALS.

108. If assembled, and it is desired to deploy at greater than the normal interval; or if deployed, and it is desired to increase or decrease the interval: 1. *As skirmishers (so many) paces*, 2. MARCH.

Intervals are taken at the indicated number of paces. If already deployed, the men move by the flank toward or away from the guide.

THE ASSEMBLY.

109. Being deployed: 1. *Assemble*, 2. MARCH.

The men move toward the corporal and form in their proper places.

If the corporal continues to advance, the men move in double time, form, and follow him.

The assembly while marching to the rear is not executed.

KNEELING AND LYING DOWN.

110. If standing: KNEEL.

Half face to the right; carry the right toe about 1 foot to the left rear of the left heel; kneel on right knee, sitting as nearly as possible on the right heel; left forearm across the left thigh, right hand resting on right leg.

111. If standing or kneeling: LIE DOWN.

Kneel, but with right knee against left heel; carry back the left foot and lie flat on the belly, inclining body about 35 degrees to the right.

112. If kneeling or lying down: RISE.

If kneeling, stand up, faced to the front, on the ground marked by the left heel.

If lying down, raise body on both knees; stand up, faced to the front, on the ground marked by the knees.

113. If lying down: KNEEL.

Raise the body on both knees; take the position of kneel.

114. In double rank, the positions of kneeling and lying down are ordinarily used only for the better utilization of cover.

When deployed as skirmishers a sitting position may be taken in lieu of the position kneeling.

SECTION VI.—COMPANY DRILL.

(Dismounted.)

115. Company drills dismounted are limited to those necessary to fix the attention of the men, to teach habits of discipline

and prompt obedience, and to furnish an orderly means of handling the company.

116. The instruction described for the company dismounted is applicable, with obvious modifications, to the instruction of any number of platoons, sections, or squads.

117. A company dismounted comprises the personnel shown in detail in Tables of Organization.

118. For technical and tactical purposes, the enlisted personnel of the company is assigned to sections and platoons. The sections are organized to meet the special conditions of service which they are called upon to perform. A gun section consists of 1 sergeant, who is the section leader, 2 section agents, and 2 gun squads.

A platoon consists of a lieutenant, a range taker, 3 platoon agents, and 2 gun sections. One of the company mechanics is assigned to each platoon in the field.

119. The company is divided into 9 sections, the first 6 sections being gun sections. The train, commanded by the train lieutenant, consists of the seventh and eighth sections. The seventh section is the combat train section and consists of two 4-mule wagons, the kitchen wagon, and two spare gun carts, with the stable sergeant in charge of the ammunition wagons and the mess sergeant in charge of the kitchen wagon; the eighth section consists of the supply wagon, the water and ration carts, and is commanded by the supply sergeant. The ninth section is the company commander's detail and consists of the company agents, signalmen, and scouts commanded by the signal corporal. (See Pls. I to VI, inclusive.)

120. The company dismounted is formed in double rank with the platoons arranged from right to left in the order of their permanent numbers, except that the ninth section, plus the platoon and section agents, forms on the right of the first platoon and is commanded by the reconnaissance officer. The members of the seventh and eighth sections in the order named habitually take their places in the line of file closers.

Platoon and section leaders supervise the movements of their units.

POSTS OF OFFICERS, NONCOMMISSIONED OFFICERS, ETC.

(In line.)

121. The posts of officers and noncommissioned officers are as shown in Plate I. The company range taker is the right guide of the company; the platoon range takers are the platoon guides; the platoon range taker of the left platoon is also the left guide of the company.

In platoon movements the post of the platoon guide is at the head of the platoon if the platoon is in column, and on the guide flank if in line. The guides of a column of squads place themselves on the flank opposite the file closers.

To change the guides and file closers to the other flank, the captain commands: 1. *File closers on left (right) flank*, 2. *MARCH*.

The file closers dart through the column; the captain and guides change.

In column of squads each rank preserves the alignment toward the side of the guide.

122. In taking intervals and distances, unless otherwise directed, the right and left guides, at the first command, place themselves in the line of file closers, face to the flank, and each steps off with the file nearest him. In *assembling* the guides and file closers resume their positions in line.

123. In movements executed simultaneously by platoons or sections (as *platoons or sections right*, or *platoons or sections column right*), platoon leaders or section leaders repeat the preparatory command (*platoon or section right*, etc.) applicable to their respective platoons or sections. The command of execution is given by the captains only.

TO FORM THE COMPANY.

124. At the sounding of the assembly the first sergeant takes position 6 paces in front of where the center of the company is to be, faces it, draws saber, and commands: *FALL IN*.

The company range taker places himself, facing to the front where the right of the company is to rest, and at such point that

the center of the company will be 6 paces from and opposite the first sergeant; the squads and sections form in their proper places on the left of the right guide, superintended by the section and squad leaders, who then take their posts.

The first sergeant commands: *REPORT*. Remaining in position at the order, the section leaders, in succession from the right, salute and report: *All present*; or, *Private(s) ——— absent*. The salutes of the section leaders is not returned by the first sergeant. The first sergeant notes the presence or absence of the men not assigned to sections, then faces about, salutes the captain, and reports: *Sir, all present or accounted for*, or the names of the unauthorized absentees, and, without command, takes his post. Men who are known to be absent by proper authority are not reported absent by the section leaders.

The captain places himself 12 paces in front of the center of and facing the company in time to receive the report of the first sergeant, whose salute he returns, and then draws saber.

The lieutenants take their posts when the first sergeant has reported and draw saber with the captain.

TO DISMISS THE COMPANY.

125. Being in line at a halt, the captain directs the first sergeant: *Dismiss the company*. The officers fall out; the first sergeant places himself, faced to the front, 3 paces to the front and 2 paces from the nearest flank of the company, salutes, faces toward opposite flank of the company, and commands: 1. *Inspection*, 2. *ARMS*, 3. *Port*, 4. *ARMS*, 5. *DISMISSED*.

ALIGNMENTS.

126. The alignments are executed as prescribed in the school of the squad, the guide being established instead of the flank file. The rear-rank man of the flank file keeps his head and eyes to the front and covers his file leaders.

At each alignment the captain places himself in prolongation of the line, 2 paces from and facing the flank toward which the dress is made, verifies the alignment, and commands: *FRONT*.

Platoon and section leaders take a like position when required to verify alignments.

127. At dismounted formations, if a squad contains less than 6 men, it is increased to that number by transfers from other squads, or it is broken up and its members assigned to other squads or posted in the line of file closers.

TO OPEN RANKS.

128. Being in line at a halt: 1. *Open ranks*, 2. *MARCH*.

At the command *march* the front rank executes *right dress*; the rear rank and the file closers march backward four steps, halt, and execute *right dress*; the lieutenants pass around their respective flanks and take posts, facing to the front 3 paces in front of their respective platoons; the train lieutenant takes post 1 pace to the left of the reconnaissance officer. The captain aligns the front rank, the rear rank, and file closers, takes post 3 paces in front of the right guide, facing to the left, and commands: *FRONT*.

TO CLOSE RANKS.

129. Being at open ranks: 1. *Close ranks*, 2. *MARCH*.

At the command *march*, the lieutenants resume their posts in the line of file closers; the rear rank closes to 40 inches, each man covering his file leader; the file closers close to 2 paces from the rear rank; the captain takes his post.

TO FORM OR MARCH IN COLUMN OF SQUADS FROM LINE.

130. Being in line: 1. *Squads right (left)*, 2. *MARCH*; or 1. *Squads right (left)*, 2. *MARCH*, 3. *Company*, 4. *HALT*.

Each squad executes the movement (102). The platoon and section leaders and the file closers take their places. (Pl. II.)

The guide of each rank preserves the trace and step of the preceding guide at a distance of 40 inches.

TO CHANGE DIRECTION WHILE IN COLUMN OF SQUADS.

131. Being in column of squads, to change direction: 1. *Column right (left)*, 2. *MARCH*.

At the second command the front rank of the leading squad turns to the right on a moving pivot (100); the other ranks,

without command, turn successively on the same ground and in a similar manner.

Column half right (left) is similarly executed.

TO FORM COLUMN OF SQUADS FROM LINE AND CHANGE DIRECTIONS.

132. Being in line: 1. *Squads right (left), column right (left)*, 2. MARCH; or 1. *Right (left) by squads*, 2. MARCH.

In the first case the right squad initiates the *column right* as soon as it has completed the *squad right*.

In the second case, at the command *march*, the right squad marches *forward*; the remainder of the company executes the *squads right (101) column left (131)* on the same ground as the right squad, and follows the right squad. The right squad in moving off takes four short steps and then the full step.

TO FORM LINE FROM COLUMN OF SQUADS.

133. Being in column of squads, to form line to the flank: 1. *Squads right (left)*, 2. MARCH, 3. GUIDE RIGHT (LEFT); or 1. *Squads right (left)*, 2. MARCH, 3. *Company*, 4. HALT.

Executed by each squad (102). The platoon and section leaders, file closers, etc., take their posts (Pl. I) in the most convenient manner.

134. Being in column of squads, to form line on right or left: 1. *On right (left) into line*, 2. MARCH, 3. *Company*, 4. HALT, 5. FRONT.

At the first command the corporal of the leading squad commands: *Right turn*. The corporals of the other squads command: *Forward*, if at a halt. At the second command the leading squad turns to the right on a moving pivot. The command *halt* is given when the leading squad has advanced the desired distance in the new direction; it halts; its corporal then commands: *Right (left) dress*.

The squads in rear continue to march straight to the front; each, when opposite the right of its place in line on the left of the preceding squad executes *right turn* at the command of its corporal; each is halted on the line at the command of its corporal, who then commands: *Right dress*. All dress on the first squad in line.

If executed in double time, all the squads march in double time until halted.

135. Being in column of squads, to form line to the front: 1. *Right (left) front into line*, 2. MARCH, 3. *Company*, 4. HALT, 5. FRONT.

At the first command the corporals of the squads in rear of the leading one command: *Right oblique*. If at a halt, the corporal of the leading squad commands: *Forward*. At the second command the leading squad moves straight forward; the rear squads oblique as indicated. The command *halt* is given when the leading squad has advanced the desired distance; it halts; its corporal then commands: *Left dress*. Each of the rear squads when opposite its place in line resumes the original direction at the command of its corporal; each is halted on the line at the command of its corporal, who then commands: *Left dress*. All dress on the first squad in line.

If executed in double time, all the squads march in double time until halted.

TO FORM FLANK COLUMN OF FILES FROM LINE.

136. Movements in flank column have no disciplinary value. Their use should be limited to the rare occasions necessitating a narrow front of the column. They are executed in quick time only.

137. Being in line at a halt: 1. *Right (left)*, 2. FACE, 3. *Forward*, 4. MARCH.

At the second command all face to the right. At the fourth command all take the full step. Individuals not in the two ranks move so as to preserve the relative positions they had in line.

138. Marching in column of squads: 1. *Route order*, 2. MARCH; or, 1. *At ease*, 2. MARCH.

Officers carry their sabers at will or in the scabbard; the men retain their positions in ranks, but are not required to keep step.

If the command be *route order*, the men are permitted to talk; if the command be *at ease*, silence is preserved.

SECTION VII.—THE GUN SQUAD.

(Dismounted, preliminary exercises.)

139. The gun squad consists of 1 corporal and 8 privates, and is the basic unit of the machine-gun company.

The squad is equipped with two carts, one carrying the gun and one the ammunition. The duties of the members of the gun squad are as follows:

The corporal commands the squad, No. 1 is the gunner, No. 2 is the loader, Nos. 3 and 4 are ammunition men, Nos. 5 and 6 are spare men and are in charge of the belt-filling station, Nos. 7 and 8 are drivers.

140. The following tools are carried by the different members of the squad:

The corporal carries a wire cutter; No. 3, a pick; Nos. 4, 5, and 6, shovels; and No. 8, a hand ax.

141. The object of the preliminary drills is to insure individual expertness and clean-cut movements in handling the gun by night as well as by day; therefore, night drills or drills with the men blindfolded must be held until all movements are executed smoothly and without false motions.

142. The preliminary drill consists of—

1. Forming the gun squad.
2. Examining the gun.
3. Mounting the gun.
4. Dismounting the gun.
5. Loading for automatic fire.
6. Loading for single shots.
7. Laying the gun.
8. Suspending fire.
9. Ceasing fire.
10. Unloading.

TEACHING ELEMENTARY DRILL.

143. 1. Equipment required for each gun team: Gun, tripod, 2 belts and dummies, 2 ammunition boxes, tool box, landscape targets.

2. The gun and tripod will be placed in line on the ground about 3 paces apart and about 30 yards from the landscape target.

3. Tripod on the left, clamps tight, strap around trail and buckled, traversing clamp sufficiently tight to prevent the tripod head from coming out of the socket and to prevent it from swinging around when the tripod is being carried, legs to the rear, tripod head over trail.

4. Gun on the right, muzzle pointing to the front, stem in, bottom plate slide closed, covers locked, handle block pin screwed in, T head pointing straight up and down, rear sight leaf lowered with slide set at 600, barrel disk tight and sleeve secured with locking pin, trigger pushed and mainspring released, heads in traversing handles screwed home, water jacket filled (see note below), oil reservoirs filled.

5. Tool box or gunner's pouch (if issued) beside the gun.

6. Ammunition boxes about 3 paces in rear of the interval between gun and tripod.

NOTE.—In elementary drill, water will not be placed in the water jacket until the stage of combined drill has been reached.

TO FORM THE GUN SQUAD.

144. The instructor indicates the place of formation, about 8 paces in rear of the gun, and commands: FALL IN. At this command the squad assembles as in "The school of the squad" (91). The instructor then commands: CALL OFF. Commencing on the right the men call off alternately, front and rear rank, "One," "Two," "Three," "Four," and so on.

TO POST THE GUN SQUAD.

145. Posts. At the command Posts, No. 1 will repeat the order; and all men move at double time to positions as follows: No. 1 will pass behind the gun and fall in on the left of the tripod; No. 2 will fall in on the right of the gun; No. 3 will fall in on the left of the ammunition box; Nos. 4, 5, and 6 will fall in about 5 paces in rear of No. 3, No. 4 being on the right.

As soon as No. 1 gets to his position, he will attend to the point mentioned in paragraph 143, section 3, and, in addition,

will see that the elevating and trunnion pins are properly in position, and that both the elevating screws are equally exposed.

No. 2 will attend to the points mentioned in paragraph 143, section 4, and will inspect the tool box, making certain that the contents are complete. (The inspection of the tool box is done twice only during the drill; once by the first No. 2 and once by the last No. 2.)

No. 3 will examine the belt and see that the dummies are correctly placed in the box, and will then lock the box. The catch on the ammunition box will be toward the front. He will then report "Correct" to No. 2, who will report "Gun and ammunition correct" to No. 1, who in turn will report "All correct" (or otherwise) to the instructor.

TO EXAMINE THE GUN.

146. Before commencing the drill the instructor commands: EXAMINE THE GUN. Each number then examines the gun and equipment as follows:

No. 2 examines the gun and sees that—

1. The follower is screwed down tight.
2. The barrel disk is tight.
3. The stem and drain plug are in.
4. The feed box is seated and the front cover catch turned down.
5. The sight is in working order.
6. The lock is seated and the mainspring is released.
7. The bottom plate slide is closed.
8. The oil reservoirs are full.

No. 1 examines the tripod and sees that—

1. The legs are closely folded, strap around trail.
2. The traversing clamp is tight, tripod head over trail.
3. The pins are in and turned down.
4. The elevating screws are exposed the same amount.

No. 3 examines the belt and sees that—

1. The cartridges are correctly placed and aligned.
2. The belt is packed correctly in the box and the lid fastened.

As each man finishes his examination he reports to the corporal.

TO MOUNT THE GUN.

147. NOTE.—The instructor will now bring the team to the left of the spot where the gun is to be mounted, so that they may see all movements clearly and listen to explanations. He will then act as No. 1, himself, giving and repeating the order MOUNT GUN, and will point out a spot which will be about 30 yards from the target where the gun is to be mounted.

On the command MOUNT GUN, No. 1 picks up the tripod with his right hand at the balance, steadies it with the left hand, and moves forward at a run to the designated position. He then places the tripod on the ground, unclamps the legs, swings legs to the front and clamps them in such position that the socket will be upright and at a convenient elevation. He then sits down behind the tripod and withdraws elevating pin with the right hand and the trunnion pin with the left hand. While adjusting the tripod, the following points must be attended to: The left forearm must be supported by the left thigh and the clamping handles should, if possible, both be manipulated with the right hand.

As soon as the tripod is nearly in position, No. 2 pushes the bottom plate slide to the rear, grasps the right handle block with the left hand, passes the right hand over the water jacket and lifts the gun so that the barrel will be pointing to his right, under his right arm, moves forward at a run, and takes position at the right of the tripod and facing it.

He must reach the position at the moment No. 1 is removing the elevating and trunnion pins. He places his right foot between the front legs of the tripod, kneels on the left knee, supporting the weight of the gun on the right knee. With the assistance of No. 1 he puts the gun in position, inserts the trunnion pin, and turns it down. He then removes the stem and lies down opposite the feed box of the gun, placing the belt box in position in line with the feed box.

No. 1 assists No. 2 in adjusting the gun to the tripod and inserts the elevating pin. After putting in the elevating pin No. 1 will at once level the gun, adjust the traversing clamp to see that it is moderately tight, and take the correct hold; eyes must be directed toward the target.

No. 3 takes two ammunition boxes and places them in reach of No. 2, then returns to his original position. The catches should be to the front and the boxes must not be placed in such a position that No. 2 is likely to knock them over as he lies down. The ammunition must be at hand by the time No. 2 is ready for it.

When the men have made sufficient progress in the foregoing lessons, they will be exercised in combining them and coming into action. Three aiming marks will be pointed out on the landscape target by the instructor, one of which should be in the foreground, one in the middle distance, and one in the background.

The instructor will name the range and target and at the command or signal ACTION the gun will be mounted, loaded, and laid. As soon as No. 2 puts up his hand, the aim and sight setting will be checked, and then the various points taught in the earlier lessons will be criticized. No. 2 must not be allowed to adjust the sights. Each number must perform the duties laid down for him in the earlier lessons and the aiming marks given by the instructor must be service targets and not haystacks, windmills, or steeples.

148. When the gun is mounted and the Nos. 1, 2, and 3 are in position, the following points should be criticized by the instructor:

1. Actions of Nos. 1, 2, and 3 until the gun is mounted.
2. Trail toward the target.
3. Feet and legs on ground (necessary for rough ground drill).
4. Clamps of legs tight.
5. Socket upright.
6. Traversing clamp tight (this must be tested by the instructor in the same way that the No. 1 tests it).
7. Pins in properly and turned down.
8. Elevating screws equally exposed.
9. Tripod a suitable height for the firer.
10. Gun level.
11. Stem out.
12. Front cover locked.
13. Bottom plate slide open.
14. Rear sight leaf down, slide at 600 yards.
15. No. 1 sitting and holding the gun correctly.

16. No. 2 lying down with head below the level of the gun, firer's pouch (if issued) slung across his shoulders.

17. Ammunition box in correct position.

18. No. 3 lying down in rear and to a flank.

NOTE.—When the instructor criticizes, faults should be pointed out in such a manner that all the team benefits from the criticism.

TO DISMOUNT THE GUN.

149. At the command DISMOUNT GUN, No. 1 removes both pins and carries the tripod back to its original position, clamps the legs and lays the tripod on the ground on the left of the gun. In folding the legs he first loosens the clamps, allowing the tripod to collapse, next seizes the tripod head with both hands, and with a sharp upward, forward, and downward movement folds up the legs. He then tightens the clamps, and, if necessary, aligns the tripod head over the trail and lies down on the left of the tripod.

No. 2 passes the ammunition box to No. 3, lifts the gun from the tripod, replaces the stem before leaving the gun position, and then double times back to the original position. Before placing the gun on the ground he will close the bottom plate slide and reset the sight at 600 yards.

No. 3 goes forward at double time to the gun position and brings back both ammunition boxes to the original position.

NOTE.—At the beginning of this exercise it is well to divide the action of dismounting the gun into two parts, the dismounting of the tripod being mastered first by all members of the team, after the instructor has shown how the tripod is dismounted. When all of the numbers have made reasonable progress with the tripod, the instructor will then continue the instruction in mounting the gun and dismounting the gun.

150. Efficiency having been attained under the preceding paragraphs, with the tripod in its highest position, the gun squad is then instructed in mounting the gun on hillsides, uneven ground, and in the several positions of the tripod. (Pls. 30 to 40, inclusive, M. G. F. M.)

151. The gun squad is instructed in mounting the gun from the prone position and in firing from the prone, kneeling, and sitting positions.

TO LOAD THE GUN FOR AUTOMATIC FIRE.

152. 1. *Automatic fire*, 2. *LOAD*.

NOTE.—The instructor first demonstrates the duties of No. 1 and No. 2.

At the command *LOAD*, No. 1 holds the roller handle in its rearmost position with the right hand and advances his left hand to the left of the feed box, ready to grip the tag of the belt.

No. 2 opens the ammunition box, holds the end of the belt with his forefinger (right hand recommended) on the brass tag at the point where it joins the fabric, and pushes the tag of the belt through the feed box as far as possible.

No. 1 grips the tag, then pulls the belt through the feed box as far as possible, and releases the roller handle. He again pulls the roller handle to the rear, pulling the belt to the left a second time as far as it will go, and again releases the roller handle. The gun is now loaded for automatic fire and No. 1 resumes his hold on the gun.

TO LOAD FOR SINGLE SHOTS.

153. 1. *Single shots*, 2. *LOAD*. At the command *LOAD*, No. 1 pulls the roller handle to its rearmost position; No. 2 passes the tag of the belt through the feed box; No. 1 holds the roller handle in its rearmost position with the right hand, grasps the tag of the belt with the left hand and pulls it straight through the feed box as far as it will come. He then releases the roller handle and without pulling on the belt he again pulls the roller handle to its rearmost position and releases it. The gun is now loaded for single shots; by bringing the roller handle to the rear after each shot without pulling the belt, the gun will fire single shots. To change from single shots to automatic fire at any time, it is necessary to pull the roller handle to its rearmost position, pull the belt to the left, and release the roller handle. The gun being loaded for automatic fire, single shots may be fired by first operating roller handle once without pulling belt.

TO LAY THE GUN.

154. NOTE.—It is an advantage to combine the adjustment of sights with laying the gun; therefore, instruction in aiming should be given prior to instruction in laying the gun.

The target being indicated by the instructor, the command is given: 1. *Range (800 yards) right (left) (2)* (this being the deflection in points of windage to the right (left), 2. *At (SUCH AN OBJECT)*. At the first command, No. 1 raises the rear sight leaf (unless the range announced is less than 500 yards, when the battle sight will be used) and moves the slide until the line of sight coincides with the line on the leaf corresponding to the range ordinate. He then taps the gun over until the correct direction is obtained and elevates or depresses until the aim is correct. Should a fairly large change in direction be necessary, No. 1 will order No. 2 to loosen the clamp, swing roughly on the target, order No. 2 to tighten, and then lay accurately by tapping. It is most important that while tapping the gun or manipulating the elevating wheel, the correct hold should be maintained with the other hand. As soon as the aim is correct, he then grasps both handles, places the thumbs on the trigger, releases the safety catch, and by calling *READY*, orders No. 2 to put up his hand. Care must be exercised when checking the aim to prevent the gun being moved as No. 1 moves his head to one side to allow the aim to be viewed by the instructor.

TO FIRE THE GUN.

155. The gun being mounted and loaded, or assumed to be loaded: 1. *Range (800) right (left) (2)*, (this being the deflection in points of windage to the right or left), 2. *At (SUCH AN OBJECT)*, 3. *Fixed (distributed, searching, ranging) fire*, 4. *(So many) rounds (as 1 belt, etc.)*, 5. *COMMENCE FIRING*.

The details and methods to be used in teaching the different kinds of fire are given in the Machine-Gun Firing Manual. For definitions of the different kinds of fire see "Definitions."

At the first and second commands the operations prescribed in the previous paragraph are performed. The third and fourth commands are preparatory and indicate the class of fire and the number of rounds to be fired. These commands are given when necessary.

At the command *COMMENCE FIRING*, No. 1 instantly presses the trigger without deranging his aim and at the same time maintains a steady hold on the handles.

TO SUSPEND FIRING.

156. The instructor blows a long blast on his whistle, and repeats same if necessary, and commands SUSPEND FIRING. Firing stops; No. 1 releases the pressure on the trigger. The gun is left loaded and in a position of readiness for an instant resumption of firing. The corporal and No. 1 continue their observations of the target, the aiming point, or the place at which the target disappeared or at which it is expected to reappear.

TO CEASE FIRING.

157. At the command CEASE FIRING, No. 1 releases the pressure on the trigger, grasps the roller handle with right hand, and brings it to its rearmost position not less than three times, pulls the trigger, and lays down the rear sight. No. 2 grasps the upper and lower feed-box pawls with the thumb and forefinger of the left hand, presses them together, and with the right hand withdraws the belt from the feed box, replacing it in the ammunition box.

TO UNLOAD.

158. At the command UNLOAD, No. 1 will lower the sight leaf, if it be raised, with the left hand; at the same time he will pull the roller handle to its rearmost position and immediately allow it to fly forward, repeating this motion at least three times. He will then press the upper and bottom pawls of the feed box with the right hand, the upper pawls being pressed with the thumb and the bottom pawls with the finger, taking care to keep the hand clear of the entrance to the feed box. No. 2 will withdraw the belt and pack it carefully in the box; No. 1 will then release the mainspring by pressing the trigger.

SECTION VIII.—THE SQUAD.

(Mounted.)

159. The gun squad is habitually formed for drill as shown in Plate IV.

The carts habitually turn on the arc of a circle whose radius is 2 yards.

In all changes of direction, turns, and abouts the carts maintain their relative positions, the gun cart leading.

In all changes of direction the members of the gun squad conform to the movement of the carts.

The gun cart is the guide for the squad in all formations, the other elements maintaining their relative positions with respect to it.

SQUAD DRILL.

160. The gun mule and ammunition mule being hitched, as described on page 178, the drivers take their positions at the head of the mules and remain at attention. The gun squad falls in, facing to the front, with the center of the rear rank 3 paces to the front of the gun mule, the squad leader taking post as in the Squad Dismounted.

TO POST THE GUN SQUAD.

161. The squad leader commands: Posts.

At this command members of the gun squad take their posts as in Plate IV.

TO RE-FORM THE GUN SQUAD IN FRONT OF THE CARTS.

162. The squad leader commands: FALL IN, placing himself so that the center of the rear rank of the squad will be 3 paces to the front of the gun mule. Members of the gun squad fall in at a run.

TO MARCH TO THE FRONT.

163. 1. *Forward*, 2. MARCH. At the preparatory command the drivers collect their animals (440) and the men prepare to march (74).

At the command of execution all move to the front.

TO CHANGE DIRECTION.

164. 1. *Squads right*, 2. MARCH. At the command *march* the gun cart turns on the arc of a circle whose radius is 2 yards.

The ammunition cart follows in trace and turns on the same ground as the gun cart, the members of the squad conforming to the movement.

TO MARCH TO THE REAR.

165. 1. *To the rear*, 2. MARCH. At the command *march* the gun cart turns to the *left about* on the arc of a circle whose radius is 2 yards, followed in trace by the ammunition cart.

166. To march to the rear for a few paces: 1. *Backward*, 2. MARCH. At the command *march*, the drivers rein back the mules, and the men execute *backward march* as in the school of the soldier.

TO OBLIQUE.

167. 1. *Right oblique*, 2. MARCH. At the command *march* the gun and ammunition carts, respectively, execute a half turn to the right and move off in the oblique direction.

TO RESUME THE MARCH TO THE FRONT.

168. 1. *Forward*, 2. MARCH. At this command the gun and ammunition carts execute a half turn to the left and continue their march to the front.

TO HALT.

169. 1. *Squad*, 2. HALT. At the command *halt* the drivers rein in their mules and the men halt.

TO PREPARE FOR ACTION.

170. The command is: ACTION. At this command the carts, if moving, halt. The squad leader marks the place at which the gun is to be set up. No. 1 secures the gun; No. 2 the tripod; No. 3 the water box and one ammunition box; No. 4 the tool box, condensing device, and one ammunition box; Nos. 5 and 6 secure the belt-filling machine and loose ammunition.

The Nos. 1, 2, 3, and 4, as soon as they have secured their equipment, move forward as described in paragraph 147, and, under the direction of the corporal, mount the gun.

The senior driver takes command of the carts, moves them on the run to the flank, or to the rear, to a position under cover.¹ Nos. 5 and 6 establish a belt-filling station as directed by the corporal.

TO REASSEMBLE THE SQUAD.

171. The command is: ASSEMBLE. At this command the gun is dismounted, the carts move up at a run to their original positions, and halt; the squad resumes its original formation. In reassembling, the men move at a run.

SECTION IX—THE SECTION.

(Mounted.)

172. The section is habitually formed in line or close line as in Plates III and IV or in column of squads as in Plate II.

The post of the section leader when the section is in line is 3 paces in front of the center of the interval between squads. When the section is in column of squads his post is on the left of the driver of the leading mule.

The section in column of squads marches to the front, to the rear, obliques, and halts in the same manner and by the same commands as prescribed for the squad, substituting "section" for "squad."

TO CHANGE DIRECTION.

173. Being in column of squads: 1. *Column right (left)*, 2. MARCH. At the first command the leader of the leading squad commands: *Right turn*. The leader of the rear squad commands, *Forward*, if at a halt.

At the second command, the leading squad turns to the right as prescribed (164). The rear squad marches squarely up to the turning point and turns on the same ground and in a similar manner to the leading squad.

174. Being in line: 1. *Right (left) turn*, 2. MARCH.

¹ For purposes of drill the carts will form 20 paces to the rear of the gun position, facing to the front.

At the first command the leader of the right squad commands: *Right turn*, the leader of the left squad commands, *Right half turn, double time*.

At the second command the right squad executes a change of direction as described in paragraph 164; the left squad executes *right half turn* and, when opposite its position in the new line, it again executes *right half turn*, and comes up abreast of the right squad with an interval of 10 yards and takes up the quick time.

TO FORM LINE TO THE FRONT.

175. Being in column of squads: 1. *Right (left) front into line*, 2. MARCH, 3. *Section*, 4. HALT, 5. FRONT.

At the first command the leader of the leading squad commands: *Forward*; if at a halt, the leader of the squad in rear commands: *Right oblique*. The command *halt* is given when the leading squad has advanced the desired distance. It halts and its leader commands: *Left dress*.

The rear squad, when opposite its place in line, resumes the original direction and is halted on the line at the command of its leader, who then commands: *Left dress*.

The command *front* is given when the squads are in line and dressed.

If executed at *double time*, the leading squad moves in *quick time*.

TO FORM LINE TO A FLANK.

176. Being in column of squads: 1. *Squads right (left)*, 2. MARCH.

Executed by each squad as described in paragraph 164.

ON RIGHT INTO LINE.

177. Being in column of squads: 1. *On right into line*, 2. MARCH, 3. *Section*, 4. HALT, 5. FRONT.

At the first command the leader of the leading squad commands *Squads right*; the leader of the second squad commands, *Forward*.

At the second command the leading squad turns to the right, the rear squad moves forward, passes in rear of the leading

squad, and, when opposite its place in line, changes direction to the right.

The leading squad is halted at the fourth command, and dressed to the right by the squad leader. The rear squad, when on the new line, halts and dresses to the right. When all are dressed the command *front* is given.

If executed in *double time*, the leading squad takes the *double time* until halted.

TO FORM COLUMN AND CHANGE DIRECTION.

178. Being in line: 1. *Squads right (left), column right*, 2. MARCH; or, 1. *Right (left) by squads*, 2. MARCH.

In the first case the right squad initiates *column right* as soon as it has completed the *squads right*.

In the second case, at the command *march* the right squad marches forward; the remaining squad executes *squads right* and then *column left*, and follows the right squad.

TO FORM CLOSE LINE.

179. Being in line: 1. *On right squad*, 2. CLOSE, 3. *Front*.

At the first command the leader of the right squad commands: *Forward*. The leader of the left squad commands: *Squads right*.

At the second command the right squad moves forward twice squad distance, is halted and dressed to the right by its squad leader. The left squad executes *squads right*, and when opposite its place in the new line executes *squads left*, placing itself abreast of the right squad with 3 pace interval between carts. The command *front* is given by the section leader when the alignment is verified.

TO RE-FORM LINE.

180. Being in close line: 1. *Extend on right squad*, 2. MARCH, 3. *Section*, 4. HALT.

At the first command the leader of the right squad commands: *Forward*. The leader of the left squad commands: *Left oblique*.

At the command *march* all move off, the left squad upon gaining its interval marches to the front. The base squad halts at the fourth command. The left squad when abreast of the new line is halted and dressed. The command *front* is given by the section leader when the alignment is verified.

TO FORM CLOSE LINE TO A FLANK.

181. Being in column of squads: 1. *Left (right) into line*, 2. MARCH, 3. *Front*.

At the command *march* the leading squad executes *left turn*, advances squad distance, and halts. The remaining squads, if at a halt, move forward and, in succession, execute *squads left*, coming up abreast of the leading squad, and halt, with an interval of 3 paces between carts.

This movement is for parking the carts, ceremonies, and inspection.

TO FORM COLUMN OF SQUADS TO A FLANK.

182. Being in close line: 1. *By the right (left) flank*, 2. MARCH.

At the first command the leader of the right squad commands: *Squads right*; the leader of the remaining squads commands: *Stand fast*.

At the command of execution the right squad executes *squads right*. The remaining squads, in succession from the right, execute *squads right* when uncovered by the squad on their right.

This movement is for leaving the park, ceremonies, and inspection only.

Right by squads (platoons) (sections), or (platoons) sections right turn, can not be executed from *close line*.

TO PREPARE FOR ACTION.¹

183. ACTION. Executed as described in paragraph 147.

TO REASSEMBLE THE SQUADS.

184. ASSEMBLE. Executed as described in paragraph 149.

¹ If executed from *close line* the carts do not move.

SECTION X.—THE PLATOON.

(Mounted.)

185. The platoon marches to the front, to the rear, obliquely, and halts in the same manner, and by the same commands as prescribed for the squad mounted, substituting "platoon" for "squad."

TO CHANGE DIRECTION.

186. Being in column of squads: 1. *Column right (left)*, 2. MARCH. Executed as described for the section in column of squads (173).

Being in column of sections: 1. *Column right (left)*, 2. MARCH. At the first command the leader of the leading section commands: *Right turn*. If at a halt, other section leaders command: *Forward*.

At the command *march* the leading section turns to the right; the rear sections march squarely up to the turning point of the leading section and turn at the command of their leaders.

TO FORM LINE TO THE FRONT.

187. Being in column of sections or squads: 1. *Right (left) front into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

At the first command the leaders of the units in rear of the leading one command: *Right oblique*. If at a halt, the leader of the leading unit commands: *Forward*. At the second command the leading unit moves straight forward; the rear units oblique as indicated. The command *halt* is given when the leading unit has advanced the desired distance; it halts; its leader then commands: *Left dress*. Each of the rear units when opposite its place in line resumes the original direction at the command of its leader; each is halted on the line at the command of its leader, who then commands: *Left dress*. All dress on the first unit in line.

TO FORM COLUMN OF SECTIONS.

188. Being in column of squads or, being in line of sections, to form the platoon in line: 1. *Sections right (left) front into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

Executed by each section as described in the section mounted (175). In forming the platoon in line, it dresses on the left squad of the left section. In forming column of sections, section leaders verify the alignment before taking their posts. The platoon leader commands: *Front*, when the alignments have been verified.

When *front into line* is executed in double time, the commands for halting and aligning are omitted, and the guide is toward the side of the first unit in line.

TO FORM LINE TO THE FLANK.

189. Being in column of squads: 1. *Squads right (left)*, 2. MARCH.

Executed by each squad as described in paragraph 164.

190. Being in column of sections: 1. *Sections right (left) turn*, 2. MARCH.

Executed by each section as in paragraph 174.

ON RIGHT INTO LINE.

191. Being in column of sections: 1. *On right (left) into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

At the first command the leader of the leading unit commands: *Right turn*. The leaders of the other units command: *Forward*, if at a halt.

At the second command the leading unit turns to the right. The command *halt* is given when the leading unit has advanced the desired distance in the new direction. When halted, its leader commands: *Right dress*.

The units in rear march straight to the front; each, when opposite the right of its place in line, executes *right turn* at the command of its leader. Each is halted on the line at the command of its leader, who then commands: *Right dress*. All dress on the first unit in line.

If executed in double time, the leading unit marches in double time until halted.

TO FORM COLUMN AND CHANGE DIRECTION.

192. Being in line: 1. *Squads right (left)*, *column right*, 2. MARCH; or, 1. *Right by squads*, 2. MARCH.

In the first case the right squad initiates the *column right*, as soon as it has completed the *squads right*.

In the second case at the command *march*, the right squad marches forward; the remainder of the platoon executes *squads right* and then *column left*, and follows the right squad.

TO FORM LINE OF SECTIONS.

193. Being in column of squads: 1. *Sections column right (left)*, 2. MARCH. Executed by each section as described in paragraph 173.

194. Being in line: 1. *Sections right by squads*, 2. MARCH. Executed by each section as prescribed for the section in paragraph 178.

TO FORM CLOSE LINE.

195. Being in line: 1. *On right squad*, 2. CLOSE, 3. FRONT. At the first command, the leader of the right squad commands: *Forward*. The leaders of the left squads command: *Squads right*. At the second command the right squad moves forward twice squad distance (20 yards) and halts. The remaining squads execute *squads right* and, in succession, when opposite their place in the new line, *squads left*, placing themselves abreast of the right squad with 3-pace intervals between carts.

TO RE-FORM LINE.

196. Being in close line: 1. *Extend on right squad*, 2. MARCH, 3. *Platoon*, 4. HALT.

At the first command all squad leaders, except the leader of the base squad, command: *Left oblique*. The leader of the base squad commands: *Forward*. At the command of execution, all move off and the squads, in succession from the right, upon gaining their interval, march to the front. Only the base squad halts at the fourth command. The remaining squads, when abreast of the new line, halt.

TO FORM CLOSE LINE TO A FLANK.

197. Being in column of squads: 1. *Left (right) into line*.
2. MARCH, 2. FRONT.
Executed as prescribed for the section (181).

TO FORM COLUMN OF SQUADS TO A FLANK.

198. Being in close line: 1. *By the right (left) flank*, 2. MARCH.
Executed as prescribed for the section (182).

TO PREPARE FOR ACTION.

199. ACTION. Executed as prescribed for the squad (147).

TO REASSEMBLE THE SQUADS.

200. ASSEMBLE. Executed as prescribed for the squad (149).

SECTION XI.—THE COMPANY.

(Mounted.)

201. The company dismounted is formed on the company parade by the first sergeant, as prescribed in paragraph 120.

After the company is formed, the first sergeant commands: STABLE DETAILS FALL OUT. At this command all section leaders and drivers fall out. The senior section leader takes command, marches the details to the stables, and commands: HARNESS. At this command, all drivers and section leaders fall out, and under the supervision of the respective section leaders the mules are harnessed.

When all mules are harnessed the senior section leader commands: HITCH. At the command the mules are led to the carts and hitched, and the drivers take their posts.

When the drivers and section leaders have fallen out, the first sergeant marches the company to the gun sheds and commands: EQUIPMENT. At this command squad leaders take charge of their squads, secure all equipment that is to be placed

on the carts, and without further command load this equipment on the carts and take posts as in Plate III.

POSTS OF OFFICERS AND NONCOMMISSIONED OFFICERS.

202. The post of the company commander is 10 paces to the front of the center of the company. The post of the platoon leader is 3 paces in front of the center of his platoon. The post of the section leader is 1 pace in front of the center of the interval between squads.

TO FORM THE COMPANY.

203. The first sergeant takes post 5 paces in front of the center of the company and commands: FALL IN—REPORT. At the first command, the section leaders and squads fall in, as in Plate III. At the second command, the section leaders verify their sections, salute, and report, as in paragraph 124. When all have reported the first sergeant faces about, salutes the captain, and reports (124).

204. The captain places himself 10 paces in front of the center of and facing the company in time to receive the report of the first sergeant, whose salute he returns, and then draws saber.

The lieutenants take post when the first sergeant has reported and draw saber with the captain.

The captain commands: POSTS. At this command the members of the gun squad move at a run and take posts as shown in Plate IV.

TO DISMISS THE COMPANY.

205. The captain directs the first sergeant: *Dismiss the company*. The officers fall out, the first sergeant conducts the company to the park, where it is halted in close line, as shown in Plate III, and commands: EQUIPMENT. At this command the squad leaders take command of the gun squads and supervise the cleaning and replacing of all equipment.

The gun squads then *fall in* at a place designated by the first sergeant, and are marched by him to the company parade and dismissed.

When the equipment is removed from the carts the senior section leader commands: *UNHITCH*. At this command the mules are unhitched, under the supervision of the section leaders. The senior section leader then commands: *UNHARNESS*. The mules are led to the stables and the harness removed. The commands *unhitch* and *unharness* may be given at the same time, in which case the two duties will be performed in succession.

The harness is cleaned and the mules cared for as in paragraphs 388-448. The senior section leader then forms the details, marches them to the company parade, and dismisses them.

COMPANY DRILL.

(Mounted.)

206. The company marches to the front, to the rear, obliques, and halts, in the same manner and by the same commands as prescribed for the squad mounted, substituting "company" for "squad."

TO CHANGE DIRECTION.

207. Being in column of platoons, sections, or squads: 1. *Column right (left)*, 2. *MARCH*.

The leading unit turns to the right as prescribed in paragraphs 164 and 174. The rear units march squarely up to the turning point, and turn on the same ground and in a manner similar to the leading unit.

TO FORM LINE TO THE FRONT.

208. Being in column of platoons, sections, or squads: 1. *Right (left) front into line*, 2. *MARCH*, 3. *Company*, 4. *HALT*, 5. *FRONT*.

At the first command the leaders of the units in rear of the leading one command: *Right oblique*. If at a halt, the leader of the leading unit commands: *FORWARD*. At the second command the leading unit moves straight forward. The rear units oblique as indicated. The command *Halt* is given when the leading unit has advanced the desired distance. It halts, and its leader commands: *LEFT DRESS*. Each of the rear units,

when opposite its place in line, resumes the original direction at the command of its leader; each is halted on the line at the command of its leader, who then commands: *LEFT DRESS*. All dress on the first unit in line.

209. Being in column of squads, to form column of platoons or sections; or, being in line of platoons or sections, to form the company in line: 1. *Platoons (sections) right (left) front into line*, 2. *MARCH*, 3. *Company*, 4. *HALT*, 5. *FRONT*.

Executed by each platoon or section as described in paragraphs 175 and 188, the necessary commands being substituted.

In forming the company in line the dress is on the left squad of the left platoon; if forming in column of platoons, platoon leaders verify the alignment before taking their posts.

The captain commands: *Front* when the alignments have been verified.

When *front into line* is executed in double time, the commands for halting and aligning are omitted, and the guide is toward the side of the first unit in line.

TO FORM LINE TO THE FLANK.

210. Being in column of platoons, sections, or squads: 1. *Platoons (sections, squads), right turn*, 2. *MARCH*.

If in column of platoons or sections, executed as in paragraphs 164 and 174.

ON RIGHT INTO LINE.

211. Being in column of platoons, sections, or squads: 1. *On right (left) into line*, 2. *MARCH*, 3. *Company*, 4. *HALT*, 5. *FRONT*.

At the first command the leader of the leading unit commands: *Right turn*. The leaders of the other units command: *Forward*, if at a halt. At the second command the leading unit turns to the right. The command, *halt*, is given when the leading unit has advanced the desired distance in the new direction. It halts, and its leader commands: *RIGHT DRESS*.

The units in the rear continue to march straight to the front, each when opposite the right of its place in line, executes *right turn*, at the command of its leader, and is halted on the line at

the command of its leader who then commands: *RIGHT DRESS*. All dress on the first unit in line.

If executed in double time, the leading squad marches in double time until halted.

TO FORM COLUMN AND CHANGE DIRECTION.

212. Being in line: 1. *Squads right (left), column right (left)*, 2. *MARCH*; or 1. *Right (left) by squads*, 2. *MARCH*.

In the first case the right squad initiates the *column right* as soon as it has completed the *squads right*.

In the second case, at the command *march*, the right squad marches forward. The remainder of the company executes *squads right* and then *column left* and follows the right squad.

TO FORM LINE OF SUBDIVISIONS.

213. Being in column of squads, to form line of platoons, sections, or the reverse: 1. *Platoons (sections), column right (left)*, 2. *MARCH*.

Executed by each platoon or section as described in paragraph 173.

214. Being in line: 1. *Platoons (sections), right (left) by squads*, 2. *MARCH*.

Executed by each platoon or section as described in paragraph 178.

TO FORM COLUMN OF SUBDIVISIONS.

215. Being in column of squads: 1. *Column of platoons (sections), first platoon (section), squads right (left)*, 2. *MARCH*.

At the first command the leader of the leading unit commands, *squads right*. At the second command the leading unit executes, *squads right*, and moves off in the new direction. The units in rear march up, and, when opposite their place in the new column, execute *squads right*.

TO FORM CLOSE LINE.

216. Being in line: 1. *On right squad*, 2. *CLOSE*, 3. *FRONT*.

At the first command the leader of the first squad, if at a halt, commands: *FORWARD*. The leaders of the left squads command: *SQUADS RIGHT*.

At the second command the right squad moves forward twice squad distance (20 yards) and halts. The remaining squads execute *squads right*, and, in succession, when opposite their place in the new line, *left turn*, placing themselves abreast of the right squad with 3-pace intervals between carts.

TO RE-FORM LINE.

217. Being in close line: 1. *Extend on right squad*, 2. *MARCH*, 3. *Company*, 4. *HALT*.

At the first command all squad leaders, except the leader of the base squad, command: *Left oblique*. The leader of the base squad commands: *FORWARD*.

At the command of execution all move off and the squads, in succession from the right, upon gaining their proper interval, march to the front. Only the base squad halts at the fourth command. The remaining squads halt when abreast of the new line.

TO FORM CLOSE LINE TO A FLANK.

218. Being in column of squads: 1. *Right (left) into line*, 2. *MARCH*.

Executed as described for the section in paragraph 181, substituting the necessary commands.

TO FORM COLUMN OF SQUADS TO A FLANK.

219. Being in close line: 1. *By the right (left) flank*, 2. *MARCH*.

Executed as described for the section in paragraph 182, substituting the necessary commands.

TO PREPARE FOR ACTION.

220. *ACTION*. Executed by each squad as described in paragraph 147.

The first sergeant commands the carts.

TO REASSEMBLE THE SQUAD.

221. ASSEMBLE. Executed as described for the squad (149).

SECTION XII.—THE BATTALION.

(Mounted.)

222. Captains repeat such preparatory commands as are to be immediately executed by their company. In movements executed in route step, or at ease, the captains repeat the commands of execution if necessary.

In giving commands or cautions captains may prefix the proper letter designating their companies.

At the command *guide center (right or left)* captains command: GUIDE RIGHT (or LEFT), according to the positions of their companies.

223. When the companies are to be dressed, captains place themselves on that flank toward which the dress is to be made, 6 paces from the nearest gun cart.

In dressing the companies the gun carts are first aligned and then the ammunition carts.

Each captain, after dressing his company, commands: FRONT, and takes his post.

The battalion executes *halt, rest, marching squads right, to the rear, route step, at ease, obliques* and resumes the direct march, as explained for the squad.

When the formation of the battalion admits of the simultaneous execution by companies, platoons, or sections of movements, the major may cause such movements to be executed by prefixing, when necessary, *companies, platoons (sections)* to the commands prescribed, or *platoons right by squads*.

TO FORM THE BATTALION.

224. For purposes other than ceremonies: The battalion is formed in column of squads. The companies having been formed, the adjutant posts himself so as to be facing the column, when formed, and 6 paces in front of the place to be occupied by the leading squad of the battalion; he draws saber; *adjutant's call* is sounded or the adjutant signals: ASSEMBLE.

The companies are formed, at attention, in column of squads in their proper order. Each captain, after halting his company, salutes the adjutant; the adjutant returns the salute, and when the last captain has saluted, turns about and reports, "Sir, the battalion is formed." He then joins the major.

225. For ceremonies or when directed: The battalion is formed in line or in line of sections.

The companies having been formed, the adjutant posts himself so as to be six paces to the right of the right company when line is formed, and faces in the direction in which the line is to extend. He draws saber and *adjutant's call* is sounded.¹

When about one pace in rear of the line, each company is halted and dressed to the right.

When the left company is on the line, the adjutant, moving by the shortest route, takes post, facing the battalion, midway between the post of the major and the center of the battalion.

The major, staff, noncommissioned staff, and orderlies take their posts.

When all parts of the line have been dressed and officers and others have reached their posts, the adjutant turns about and reports to the major: "Sir, the battalion is formed;" the major directs the adjutant: "TAKE YOUR POST, SIR," and draws saber. The adjutant takes his post, passing to the right of the major.

TO DISMISS THE BATTALION.

226. DISMISS YOUR COMPANIES.

Staff and noncommissioned staff officers *fall out*; each captain marches his company off and dismisses it.

227. The commands given in company drill are equally applicable to battalion drill, making the necessary substitution, "battalion" for "company," "company" for "platoon," etc.

As the battalion will rarely be drilled as a unit, movements of the battalion are omitted.

¹ When the band is present the ceremony is conducted in conformity with the Infantry Drill Regulations.

PART II.

TACTICS.

SECTION I.—THE USE OF MACHINE GUNS.

(General.)

228. Machine-gun principles are divided into two classes—fundamental and special. The fundamental principles apply generally while the special principles apply to the use of the guns in particular forms of combat, such as attack, defense, advance guards, rear guard, village fighting, and outposts.

The principles governing marches and ammunition supply must also be considered.

229. The maximum effective use of machine-gun organizations may be expected only when its personnel is thoroughly conversant with the powers and limitations of the gun, well grounded in the principles of its use, thoroughly drilled in the mechanical operation of the gun, and trained by practical exercises to apply principles to concrete cases.

230. Machine-gun fire is concentrated infantry fire. From this statement are deduced the tactical principles governing its employment. A machine gun has special characteristics. Its fire may be concentrated on a single objective or it may be traversed to cover a wide front.

231. Due to the fixed mount from which the gun is fired, and the mechanical control of elevation and direction, the human element—nerves and excitement, so productive of errors in infantry fire—is to a large extent eliminated.

232. The machine gun aimed and fired by one man delivers an ideally controlled fire. It presents an infinitesimal target and is of such small height that it can generally be moved under cover.

It is comparatively easy to conceal from view and to secure for it effective cover against fire. The machine gun properly mounted and in the hands of properly trained men is for all practical purposes as mobile as infantry in the actual fire fight.

A machine gun, properly handled, is at work in most cases for a few minutes at a time. The machine gun is fired to kill and is not to be used as a mere means of wasting ammunition. The consumption of ammunition will at times be very great, and adequate provision must be made for a plentiful supply.

The machine gun must be amply supplied with ammunition when it goes into position, and proper means must be assured for replenishing this supply. This can only be effected by methodical training of the personnel and by previous arrangements.

233. A machine gun, being a piece of machinery and working at a high rate of speed, subject to a rapid succession of shocks, parts will break, and stoppages will occur. However, the mechanism of a machine gun is not much more complicated than that of the modern magazine rifle. With properly trained men, stoppages and breakages may be corrected within a few seconds.

The tactical rule for working machine guns in pairs arises from the fact that these stoppages occur. This rule is not to be construed that guns are to be posted at regular intervals and that adjacent guns should necessarily be posted in such manner to fire on the same objective. It does mean that in the distribution of guns two guns should be covering any given objective.

234. Machine guns on the march are extremely vulnerable and are for the time out of action. However, in well-trained hands, they may be brought into action in a few seconds. Hence the principle that machine guns once located in a suitable fire position should not be moved without good and sufficient reasons, and when moved the new position should be selected before the guns are to be moved, and the movement made as rapidly as possible.

235. It is a cardinal principle that the machine gunner does not hesitate to risk the loss of his gun. He must also be prepared to disable it at the last moment in such a manner that if captured it can not be turned upon his own force. If it is a question of leaving the position or staying, the machine gunner

stays. A few determined gunners may have a decided effect upon the final outcome of the combat.

236. The introduction of a machine-gun organization into the regiment and the battalion organization into the brigade and division, while facilitating the collective employment of machine guns, it does not necessarily follow that the guns should always be so employed. It will often be advisable to detail sections and platoons to work under the orders of battalion commanders. The organization of the company into three platoons facilitates this division, and when the tactical situation is such that it is necessary to make this distribution, it should be made without hesitation.

237. The battalion commander under whom the guns are to operate should understand the mission of the guns and the reasons which prompted their assignment to his battalion.

The battalion commander gives definite instructions to the machine-gun officer as to what is required of him.

The machine-gun commander is given the greatest possible freedom in the execution of the details of his task.

238. The various missions which may be assigned to the machine-gun organization demand the most careful preparation and organization on the part of machine-gun commanders of all grades.

The battalion and company commanders must have a definite grasp of the situation and fully understand the part they may be called upon to act. Guns temporarily detached should be returned to the control of the company commander the moment the reason for detaching them has ceased to exist.

239. During the action machine-gun commanders maintain, by means of agents, the closest possible touch with the next higher machine-gun commander, the commander of the troops under whose orders they are operating, and also with adjoining troops. It is most important that subordinate commanders keep in close touch with the commanders of units to which they may be attached and under whose command they come.

240. Telephones and buzzers can not be relied upon always for purposes of communication. Steps should therefore be taken to maintain communication by visual signaling and by agents or runners.

241. Cooperation is the keynote of machine-gun tactics, not only between the machine guns and the troops with which they are working, but also between the guns themselves. The grouping of machine guns into companies and battalions, thus centralizing control, has facilitated the execution of comprehensive schemes of machine-gun cooperation.

242. The machine-gun commander should take every possible precaution to insure cooperation not only between the guns of his company, but also between his company and the machine guns on either flank.

243. To insure concealment when on the move, machine gunners disguise their identity as such by adopting the formation of neighboring troops. Other means of escaping detection should be devised and constantly practiced. When machine guns are moving they should watch and avoid areas that may be swept by shell fire.

244. To obtain concealment while in position, the fewest possible number of men should be near the guns—two will usually be sufficient. When time, tools, etc., are available, machine-gun emplacements should be dug; but if it is not possible to construct a satisfactory emplacement, it is considered better to merely seek cover from view, as a hastily-made emplacement merely serves to draw the attention of the enemy.

245. Masks and gloves will facilitate concealment when facing strong sunlight. Special precautions must be taken to prevent the location of machine-gun positions by the artillery. The action of machine guns shelled by artillery is largely dependent upon the tactical situation.

A change of position of 50 yards or so, or the temporary cessation of fire, the guns and detachments getting under cover, may mislead the enemy and enable the guns, later, to obtain a good target readily.

A careful distribution of the members of the gun squad minimizes casualties.

246. The use of machine guns in trench warfare is covered by special regulations.

SECTION II.—THE ATTACK.

247. Machine guns with the infantry firing lines are of little use unless the ground is exceptionally favorable.

The progress of the firing line must therefore be watched carefully with a view to pushing on a certain number of machine guns to closely support it whenever possible.

248. The usual methods of supporting an infantry attack are:

1. Fire from the flanks.
2. Overhead fire.
3. Long-range indirect fire.
4. Fire from a forward position.

249. Every opportunity for the use of overhead fire should be seized. All suitable ground, buildings, etc., should be utilized for this purpose when possible.

250. Machine guns may often be usefully employed to systematically search all places in the area of the attack likely to be held by the enemy.

This searching fire has a bad moral effect on the troops subjected to it, which assists the subsequent advance.

251. Often it may be possible to push machine guns forward where the ground is favorable, so that they can assist the advance of troops on their right and left.

Opportunities of this kind should not be neglected. It is possible for machine guns thus employed to remain undetected, although well in front, provided the preliminary reconnaissance is properly conducted.

252. Enemy machine guns are the weapons most likely to stop an attack. Every effort should be made to locate them with field glasses or telescopes, with a view to concentrating the fire of machine guns on them, and also to indicate their position to the artillery.

253. The machine-gun commander must be fully informed of the plan of operation at the earliest possible moment. He should make a careful reconnaissance of the ground prior to the attack. The machine-gun commander is informed of the intended action of the automatic rifles. Having made the reconnaissance and received his orders, the machine-gun commander assigns definite tasks to his companies, platoons, or sections. The guns may be divided into groups, some to go forward with the infantry, some to cover their advance, and others to act as a reserve.

254. In this manner each machine gun, or group of machine guns, is given a definite task. Before action commences every gun squad should thoroughly understand what is expected of it. It must be clearly understood by all officers that the machine guns have definite tasks, that they are under the orders of the machine-gun commander.

255. The machine guns in the attack are separated into three classes: (1) Guns going forward with the attacking infantry, (2) guns that are to cover the infantry advance, and (3) guns in reserve.

1. *The guns to go forward with the attacking infantry.*

(a) The number of machine guns to go forward depends upon the tactical situation, the front to be attacked, the nature of the ground, the number of guns available, etc.

(b) The time of their advance is determined by the terrain and the success of the firing line. They should very rarely advance with the leading line of riflemen. This is the duty of the automatic rifles, the fire of which should suffice to hold the position won until it can finally be consolidated by the machine guns.

The progress of the firing line must be carefully watched, so that the guns may be brought forward at the earliest possible moment.

(c) They should conceal their identity as machine-gun squads as much as possible by mixing with the riflemen and carrying their guns in the least conspicuous manner.

(d) The approximate locality in which the machine guns will be mounted in the captured lines should be settled before the advance.

(e) The machine guns as a rule should not open fire before the infantry advance takes place. All should be in readiness for them to be rushed forward at a moment's notice.

(f) Their rôle, then, is to make good the ground gained by the infantry against a counter attack.

(g) They should not go forward until it is certain that the firing line has captured the enemy positions.

(h) The mission of these guns is to—

- (1) Help the riflemen gain fire superiority.
- (2) Make good positions won.
- (3) Pursue the enemy with fire.
- (4) Repel counter attacks.
- (5) Cover a reorganization of the riflemen.
- (6) Cover a retirement.

NOTE.—When machine guns are advancing under shell fire, the areas being swept should be watched and avoided and detours made if necessary.

2. *The guns to cover the infantry advance.*—These machine guns will:

- (a) Provide covering fire for the firing line up to the last moment.
- (b) Search all ground likely to be held by the enemy and over which he might counter attack.
- (c) Sweep ground behind the enemy's position over which his reserves might advance.
- (d) Prevent the crossfire by rifles and machine guns from the enemy position situated on the flanks of the attack.
- (e) Bring oblique or enfilade fire on the portion of the enemy position being attacked.
- (f) Some will be pushed out in front of the line to keep down enemy fire while the infantry are getting out of their trenches and through their obstacles. These may be in saps, crops, folds in the ground, etc.
- (g) When the attacking firing line masks the fire of the machine guns, the machine guns should, if possible, direct their fire past the flanks of the attacking troops so as to keep down flanking fire and prevent flank attacks.
- (h) If attacking troops are forced to lie down between the enemy's position and the guns, the machine guns must keep down the fire of the enemy's rifles and machine guns.
- (i) When their rôle of covering fire is completed, they should automatically come again under the control of the machine-gun commander.

Orders to the machine guns detailed for this task may, if necessary, include general instructions to govern their action after the task has been completed, pending receipt of further orders from the machine-gun commander. It must, however, be remembered that it is usually dangerous to prescribe to a subordinate at a distance anything that he should be better able to decide on the spot with a fuller knowledge of local conditions, for any attempt to do so may cramp his initiative in dealing with unforeseen developments.

3. *The guns as reserve.*

Guns kept as a reserve will be under the control of the machine-gun battalion or company commander, acting under the instructions of the regimental, brigade, or division commander. Owing to their characteristics, machine guns are valuable as a reserve of fire power, and when kept in reserve in the hands of the commanding officer may prove of the utmost value at the critical moment. It must be remembered, however, that a great development of fire power is most useful in the opening stages of an attack, to cover the advance of the infantry, and it is a mistake to keep guns in reserve if they can be usefully employed in supporting the advance. These guns may be used for long-range searching fire on ground behind the enemy's line, which is likely to hold supports or reserves, but must be available to move forward at once when required.

256. The great fire power of machine guns relative to the space they occupy, the rapidity with which they may be brought into or out of action, and the ease with which they can change the direction of their fire render them especially suitable for the protection of threatened flanks and for filling gaps which may appear laterally or in depth. Any of the guns mentioned in the previous paragraphs may at times be employed in this manner.

257. During an attack it may be advisable to continue to hold certain tactical points which have been captured until the attacking troops have made good their next objective. The characteristics of machine guns fit them for this duty; their use will

avoid diminishing the strength and dash of the attacking infantry.

258. Arrangements for ammunition supply, belt filling, ammunition depots, etc., must be made before the action commences. An officer may be placed in charge of these arrangements.

259. The machine-gun commander should, as a rule, remain with the commanding officer.

260. As far as possible, the guns of a company should be kept together. If this can not be arranged, in no case should an isolated machine gun be brought into action, for a single gun may be temporarily disabled by a jam or a breakdown of its mechanism at the decisive moment.

261. An officer commanding a group of machine guns should avoid becoming involved in a duel with the enemy's machine guns, but should use his fire against important targets—the enemy's batteries, reserves, and supports.

SECTION III.—THE DEFENSE.

262. In occupying a defensive position a special reconnaissance should be made. Not only the position itself, but the ground in front, in rear, and on the flanks must be thoroughly reconnoitered. The distribution of all the guns, regimental, brigade, and division, is made under the direction of one officer, the senior machine-gun officer of the command. In this manner, and in this manner only, is it possible to employ a number of guns properly coordinated in a comprehensive scheme.

In placing machine guns to defend a position, the ideal is the location of a complete "belt" of machine-gun fire across the front of the position to be defended.

263. In the occupation of a defensive position the duties of the automatic rifles must be carefully considered and coordination established between the two weapons to insure mutual support.

1. All machine guns are arranged under the direction of one officer, who must be thoroughly acquainted with the plan of operations.

2. All machine guns are placed so that the whole front to be defended is swept by flanking fire and a "belt of fire" thus created.

3. Machine guns are placed to command covered approaches, and the ground where the enemy might concentrate prior to an attack.

4. A proportion of the guns are kept in reserve. When the ground is suitable, these may be used for indirect or overhead fire if the results are likely to justify the expenditure of ammunition, and the readiness of the guns to take up other tasks is not impaired. It will often be found advisable to prepare machine-gun emplacements at important tactical points in rear of the front line, and to detail guns for their occupation if necessary. Preparation in this respect will facilitate a rapid readjustment of the fire upon any point.

5. Secondary positions and lines of retirement are reconnoitered, and steps are taken to insure that the detachments are familiar with them. In case of a withdrawal becoming necessary, machine guns in supporting positions cover the retirement of the infantry and guns in the front line.

When the latter have occupied their secondary positions, they, in turn, will cover the movement of the guns originally in support.

6. Cooperation is arranged with the automatic rifles of the companies, which can cover the less important approaches or small depressions or hollows which the machine guns can not sweep.

7. Positions of carts and supply ammunition arranged.

8. Intercommunication between machine-gun commander and his subordinates and between subordinates and their machine guns arranged.

9. Definite orders given to all machine-gun officers.

10. A general plan of action arranged, so that all can cooperate in the event of unforeseen circumstances.

264. Each machine-gun team should know the line of retirement, and the positions of the guns on its right and left. A range card is made for each gun position.

265. Guns should be concealed in the least obvious positions and as much cover as time permits provided for the men.

266. Firing at the longer ranges reduces the effect and betrays one's strength and position prematurely to the enemy. In the defense it is advisable to let the enemy approach to within short range, and then open fire, especially when the defender is in a strong position.

267. It will often be a gain to keep the guns silent at the beginning of the hostile advance, while only the point of the enemy's advance guard or a thin line of skirmishers is in sight, and to wait until fire can be opened upon the main advance. Ranges are measured beforehand, and, if possible, marked. In all cases, the sudden and unexpected opening of heavy fire will produce more effect than the expenditure of the same amount of ammunition when the fire gradually develops and does not come as a surprise to the attacking force.

268. In all cases the machine guns should, if possible, be protected from fire from the front. At the same time they should be able to flank the front of the position with fire. Thus, although each machine gun may be fired to the flank, its front is swept by the fire of another machine gun.

Arrangements can be made so that the machine gun so placed may be able to fire to their front should an emergency make this desirable.

This can be done by—

1. Constructing loopholes and blocking them with sandbags which can be removed.
2. (a) However, if the sandbags are left in place for a considerable time without being removed, they can not be moved. (b) Loopholes filled with single sacks will not be bullet proof.
3. By training the gunner to: (a) Quickly remove the machine gun from the tripod and fire from the top of the parapet. (b) Lift the machine gun and tripod out of the trench and fire it from some previously selected spot.

269. Arrangements for firing at night should be made. The day and night gun positions will probably be different; the changes from the one to the other should be made just after dark and just before dawn.

270. Communication between the machine-gun units must be arranged with care. Machine-gun officers must keep in touch with neighboring guns and with the firing line.

SECTION IV.—SELECTION OF FIRING POSITION.

271. Machine guns may be hidden in almost any position, but it is advisable to avoid places which are either obvious or easy

to recognize, such as crossroads or single objects, or places which can easily be located on the map. It is important that guns should merge into the surroundings, and straight edges or distinct shadows should not be made.

272. Banks of rivers, canals, and railway ditches, folds in the ground, hedges, palings, or walls, also mounds of earth, may be used either to afford a covered line of approach and supply to a gun position or else a gun position itself. When firing over the top of the cover greater protection is given if hollows are scooped out for the front legs of the tripod.

273. Houses may be employed in the following manner:

The guns may be placed in rear, firing through windows or doors in line or past the sides of the house. When firing from a window, door, or hole in the roof, the gun should be placed well back for concealment. A damp piece of cloth hung in front of the gun helps to conceal the flash. When firing from a cellar care should be taken not to cause a cloud of dust to rise and give away the position. A means of retirement and alternative emplacements should be arranged. Overhead fire and observation may often be obtained from high buildings.

274. Woods and crops provide cover from view, facilities for communication, and good lines of approach or supply. In neither should guns be placed too near to the front edge. In woods it will often be possible to construct hasty overhead cover.

275. If a barricade has been constructed across a road, machine guns should not be put on the barricade itself, but, if possible, in a concealed position to a flank from which they can sweep the road.

276. Haystacks do not as a rule afford a very satisfactory position, but guns may be placed in a hollow in front or behind, firing past the side, or else in a hollow on top, firing through the front face of the stack. A machine gun concealed in a field which is covered with cornstalks, manure heaps, or mounds of roots is difficult to locate.

277. Wood stacks, planks, logs of trees, and farm implements may be used to conceal guns; cover from fire can often be obtained by the addition of bricks or sand bags.

278. Trees generally provide better observation posts than machine-gun positions.

SECTION V.—MARCHES.

(General.)

(See the Field Service Regulations.)

279. Marching constitutes the principal occupation of troops in campaign and is one of the heaviest causes of loss. This loss may be materially reduced by proper training and by the proper conduct of the march.

280. The training of machine-gun organizations should consist of systematic physical exercises to develop the general physique and of actual marching to accustom men to the fatigue and hardship incident thereto.

Before mobilization troops should be kept in good physical condition and so practiced as to teach them thoroughly the principles of marching. At the first opportunity after mobilization the men should be hardened to cover long distances without loss.

281. With new or untrained troops, the process of hardening the men to this work must be gradual. Immediately after being mustered into the service the physical exercises and marching should be begun. Ten-minute periods of vigorous setting-up exercises should be given three times a day to loosen and develop the muscles. One march should be made each day with full equipment, beginning with a distance of 2 or 3 miles and increasing the distance daily as the troops become hardened, until a full day's march under full equipment may be made without exhaustion.

282. A long march should not be made with untrained troops. If a long distance must be covered in a few days, the first march should be short, the length being increased each succeeding day.

283. Special attention should be paid to the fitting of the shoes and the care of the feet. Shoes should not be too wide or too short. Sores and blisters on the feet should be promptly dressed during halts. At the end of the march feet should be bathed and dressed; the socks and, if practicable, the shoes should be changed.

284. The drinking of water on the march should be avoided. The thirst should be thoroughly quenched before starting on the

march and after arrival in camp. On the march the use of water should, in general, be confined to gargling the mouth and throat or to an occasional small drink at the most.

285. Except for urgent reasons, marches should not begin before an hour after daylight, but if the distance to be covered necessitates either breaking camp before daylight or making camp after dark, it is better to do the former.

Night marching should be avoided when possible.

286. A halt of 15 minutes should be made after the first half or three-quarters of an hour marching; thereafter a halt of 10 minutes is made in each hour. The number and length of halts may be varied, according to the weather, the condition of the roads, and the equipment carried by the men. When the day's march is long a halt of an hour should be made at noon and the men allowed to eat.

287. The rate of march is regulated by the commander of the leading company of each regiment, or, if the battalions be separated by greater than normal distances, by the commander of the leading company of each battalion. He should maintain a uniform rate, uninfluenced by the movement of troops or mounted men in front of him.

The position of companies in the battalion and of battalions in the regiment is ordinarily changed daily so that each in turn leads.

288. The marching efficiency of an organization is judged by the amount of straggling and elongation and the condition of the men at the end of the march.

An officer of each company marches in its rear to prevent undue elongation and straggling.

When necessary for a man to fall out on account of sickness, he should be given a permit to do so. This is presented to the surgeon, who will admit him to the ambulance, have him wait for the trains, or follow and rejoin his company at the first halt.

289. Special attention should be paid to the rate of march. It is greater for trained than for untrained troops; for small commands than for large ones; for lightly burdened than for heavily burdened troops. It is greater during cool than during hot weather. With trained troops, in commands of a regiment

or less, marching over average roads, the rate should be from $2\frac{1}{4}$ to 3 miles per hour.

290. The marching capacity of trained infantry in small commands is from 20 to 25 miles per day. This distance will decrease as the size of the command increases. For a complete division the distance can seldom exceed $12\frac{1}{2}$ miles per day unless the division camps in column.

291. In large commands the marching capacity of troops is greatly reduced by faulty march orders and poor march discipline.

The march order should contain such instructions as will enable the troops to take their proper places in column promptly. Delay or confusion in doing so should be investigated. On the other hand, organization commanders should be required to time their movements so that the troops will not be formed sooner than necessary.

The halts and starts of the units of a column should be regulated by the watch and be simultaneous.

Closing up during a halt, or changing gait to gain or lose distance should be prohibited.

The horseshoer, the saddler, the company clerk, the cooks, and two privates march with the field train, under command of the officer in charge of the train.

292. The machine-gun commander habitually accompanies the commanding officer of the unit to which he is attached. A machine-gun reconnaissance party marches with the advance element of the command.

PROTECTION OF THE MARCH.

293. A column on the march in the vicinity of the enemy is covered by detachments called advance guards, rear guards, or flank guards. The object of these covering detachments is to facilitate the advance of the main body and to protect it from surprise or observation.

They facilitate the advance of the main body by promptly driving off small bodies of the enemy who seek to harass or delay it; by removing obstacles from the line of advance, by repairing roads, bridges, etc., thus enabling the main body to advance uninterruptedly in convenient marching formations.

They protect the main body by preventing the enemy from firing into it when in close formation; by holding the enemy and enabling the main body to deploy before coming under effective fire; by preventing its size and condition from being observed by the enemy and in retreat by gaining time for it to make its escape or to reorganize its forces.

SECTION VI.—ADVANCE GUARD.

294. The duties of an advance guard make it necessary that great fire power should be available when required.

A large proportion of machine guns should, therefore, be assigned to advance guards.

295. These machine guns should be well forward in the column, so that they may be able to get quickly into action.

296. The principal duties of machine guns with the advance guard are:

1. Assist in driving back enemy forces by rapid production of great fire power at any required point.

2. Assist in holding any position gained until the arrival of the infantry.

3. Cover the deployment of the main body by holding the enemy on a wide front.

297. With advance guards the machine gun will supply a useful stiffening which will often make it possible to use a smaller number of men, or, again, by increasing the number of machine guns the advance guard may be given a striking force that will enable it to take a more strongly aggressive tone toward the enemy.

298. As the preliminary action of the advance guard draws to a close and the main body deploys into line and begins the more serious engagement, it will generally be well to withdraw the machine guns from the position which they have occupied to meet the first emergency, in order to assign them to the work they are to do in the actual battle.

299. The characteristics of machine guns render them, as a rule, more suitable for employment with the reserve than with the support, but the size of the support may necessitate machine guns being attached to it.

SECTION VII.—REAR GUARD.

300. As a rear guard will usually be required to hold positions with the minimum of men, a large proportion of machine guns should be assigned to it.

301. Experience of war has shown that well-placed machine guns, only supported by a few infantry, will frequently hold up an advance for long periods.

302. In occupying a rear-guard position with machine guns the ordinary principles of the defense apply, but the following points should be specially noted:

1. As wide a field of fire as possible should be selected.
2. Guns must be concealed in the least obvious places.
3. Covered lines of retirement must be reconnoitered.
4. Carts should be close up to facilitate a hasty retirement.
5. Positions in rear must be chosen before the machine guns retire from their forward positions.
6. A proportion of the machine guns should occupy the positions in rear, before all the machine guns retire from the forward position. Thus the retirement of the last gun can be covered.

303. With a rear guard covering a retreat, the machine guns can render valuable services. Rear-guard fighting is particularly well adapted to their power of suddenly opening a heavy fire, and the business of the machine-gun commander will be to choose, if possible, a position from which this fire will come as a surprise to the pursuing troops. Having accomplished his object of checking the enemy's movement and forcing him to deploy for the attack, he will fall back to another position where he can repeat the same maneuver.

SECTION VIII.—OUTPOSTS.

304. The ease with which a machine gun can be concealed, its mobility, its adaptability to night firing, and its concentration of fire on a narrow frontage makes it the ideal resisting weapon for use with an outpost for the purpose of covering roads, bridges, defiles, or other marked lines of approach.

305. A judicious use of machine guns stiffens the line of resistance and permits the employment of the minimum number

of riflemen. However, the machine gun is solely for the purpose of increasing the stopping power of the outpost, and in return it must have the protection of the outpost.

306. Aside from the use of machine guns in covering defiles, advantage may be taken of their characteristics of concentrated-fire power to place them in salients and reentrants and at other points where the establishment of a heavy firing line is not feasible.

307. The size and disposition of the outpost with the number of guns assigned to the different subdivisions thereof depends upon many circumstances, such as the size of the whole camp, the proximity of the enemy, and the situation with respect to him, the nature of the terrain, etc.

308. The guns attached to the outpost, if sufficient in number, may be placed at or near the line of resistance, with a section covering each of the main avenues of approach, or if too few in number to admit of such a distribution, emplacements should be prepared or firing positions reconnoitered and located covering the line of approach, the guns being held in reserve at a central point in rear from which they may be moved easily and quickly to that portion of the line where they are needed.

309. Unless an attack is imminent, machine guns assigned to the outpost do not occupy their fire position during the day, but are held as reserves in their sector. However, emplacements or firing positions are prepared, routes marked, range cards made, and all preparations for immediate action completed.

310. The night position for each gun is very carefully selected and arrangements made for night firing, and the gun placed in position before dark. The guns are so located that an enemy in advancing must pass over or occupy ground swept by their fire.

311. The avenues of approach to be covered must be considered in the order of their importance and an endeavor made to leave unprotected no approach by which an enemy might advance.

Great care must be taken to conceal the guns from observation when bringing them into position or withdrawing them.

312. The orders given by the platoon commander to the leader of a machine-gun squad or section detailed for duty with any

fraction of an outpost must be clear and definite and should include:

1. Information as to the situation sufficiently complete to enable him to act intelligently upon his own initiative should the necessity arise.

2. The exact mission of the guns.

3. The location of adjoining guns.

4. The disposition to be made of his carts.

313. The machine-gun commander upon arriving at the designated subdivision of the outpost to which he is assigned is given the location of the infantry sentinel or sentinels. He then—

1. Arranges a system of signals between this sentinel or sentinels and the sentinel at the gun.

2. Selects firing positions for each gun.

3. Obtains ranges and prepares range cards.

4. Arranges for the concealment of the gun by means of natural or artificial cover.

5. Notes the field of fire.

6. Marks the limits of the traverse.

7. Locates neighboring guns.

8. Arranges for mutual fire support.

9. Completes preparation for night firing.

10. Sees to the necessary ammunition supply.

11. Posts his sentinels at the gun (one by day and two by night).

12. Holds the other members of each gun squad in convenient supporting distance of the gun.

13. Sends the carts to the designated assembly point.

14. Assures himself that every man of his command is familiar with the arrangements indicated in so far as it pertains to the gun to which the man belongs.

15. Arranges for communication with his next higher commander.

16. In case of a gas attack sees that machine gun is cleaned immediately after.

In general, takes every possible means to coordinate his work with the unit to which he is attached.

314. Sentinels over machine guns as part of an outpost are, at night, posted in pairs, two men to each gun in position. Usually one sentinel will be sufficient during the day.

The sentinel's orders must be clear and definite.
He—

1. Keeps the gun loaded and at the safe while it is in position.

2. Maintains observation constantly to the front.

3. Is responsible that the water does not freeze in the jacket, and that the gun is protected from dust and sand.

4. Operates the mechanism frequently to insure that it is in working order.

5. Keeps himself concealed, but does not sacrifice observation to concealment.

6. Must know—

(a) The exact mission of the gun.

(b) The limits of the traverse.

(c) The points marked on the range card.

(d) The arrangements for night firing.

(e) The position of the rifle sentinels.

(f) The arrangements for communication with the sentinel.

(g) The avenues of communication to the rear.

(h) The location of neighboring guns.

(i) The arrangements for supporting fire.

(j) The location of the remainder of the gun squad.

(k) Any special orders for his gun position, such as action of patrols, etc.

(l) *What the signal is for opening fire, and whether or not he is to open fire on his own initiative.*

In case of an attack at night, No. 2 sentinel calls the other men of the gun squad.

Upon relief of sentinels, the firing mechanism will be operated in the presence of the noncommissioned officer in charge of the party.

Relieving gun detachments and sentinels will assure themselves that they are fully conversant with the instructions for the gun squad and the sentinel as described in this and the preceding paragraph. In addition, relieving sentinels should be informed whether or not the gun has been fired during the previous relief; and if so, at what target and from what gun position.

SECTION IX.—VILLAGE FIGHTING.

315. As soon as the riflemen have made good one edge of a village, machine guns are brought up in close support. They then search windows, doorways, roofs, etc., likely to be held by the enemy.

316. Machine guns are used to command cross streets, etc., in order to guard against attack on the flanks or rear of the infantry.

317. Guns are posted on the edges of villages to prevent flank attacks.

318. When possible, machine guns are pushed forward on the flanks, so as to command the exits of the village.

319. During village fighting every use is made of windows, doors, etc., as machine-gun positions.

SECTION X.—AMMUNITION SUPPLY.

(Plate VII.)

320. Ammunition supply is of vital importance in any engagement and must be given very careful consideration and forethought. It is a subject that is very much neglected in our Army. The duties of the various commanders with respect to the supply of ammunition are outlined in the chapter on the "Duties of the personnel, before and during combat."

In working out the problems before him, the fire controller must bear in mind—

1. The amount of ammunition needed immediately.
2. The amount needed from time to time.
3. The distance to be carried by hand.
4. Character of ground to be crossed.
5. Method to be used in carrying the ammunition forward.
6. The number of men required.¹

321. The minimum requirements are:

With each gun, 1,500 rounds loaded in belts, tool box, and water box.

In each ammunition cart, 3,500 rounds loaded in belts.

¹ If he has not enough men, then he must call on neighboring troops for assistance.

In each ammunition cart, 2 water boxes, full, and belt-filling machine.

The 1,500 rounds, 1 water box, and 1 tool box must be kept with the gun at all times.

The belt-filling station must be established as near the gun position as the terrain and the enemy's fire will permit. At this station will be the 3,500 rounds, 2 water boxes, and the belt-filling machine.

322. It is the duty of the fire controller (section leader, platoon leader, or company commander) to mark the place for the belt-filling station and establish it with Nos. 5 and 6 as loaders.

After establishing this station the fire controller next causes the ammunition on the ammunition cart to be unloaded, providing he expects to remain in his position, and immediately sends the ammunition cart to the combat train to refill.

323. During the time the position is being occupied it is the duty of the commander of the combat trains to communicate with the fire controller and inform him of the best meeting place for the ammunition carts and the combat train. As soon as the ammunition carts are refilled from the combat train the combat train must refill from the ammunition train. The succeeding paragraph may apply at times during the offense.

324. In defensive operations it will be advisable for the combat trains to unload their ammunition at some place convenient and accessible to the ammunition carts. The ammunition carts can then refill, carry ammunition forward as far as permissible, and also unload. From that point forward the ammunition must be carried by hand to the belt-filling station, and from the belt-filling station to the gun positions. If ammunition must be carried over fire-swept ground from the ammunition carts to the belt-filling station, the cases may be dragged or opened and the bandoleers carried by the men. If the men are required to crawl forward, then five bandoleers is a good load per man.

325. The machine-gun officer's duties are not over when the above requirements have been fulfilled. He must insure communication between—

1. The firing line and the belt-filling station.
 2. The belt-filling station and the ammunition carts.
 3. The ammunition carts and the ammunition train.
- He must also see that—
1. In wet weather the ammunition and belts are kept dry.
 2. All the ammunition is not in one place.
 3. A careful inspection of each belt is made before it is sent to the gun positions.
 4. Sufficient ammunition is on hand for the crisis.

PART III.

DUTIES OF THE PERSONNEL, PRECEDING AND DURING COMBAT.

SECTION I.—GENERAL RULES.

326. General reconnaissance is the function of the infantry and cavalry. Machine-gun commanders should be kept sufficiently well informed of the situation to enable them to use their guns effectively.

The machine-gun commander makes such special reconnaissance as is necessary to insure the proper posting and the effective employment of the guns in the execution of the assigned tasks. For this purpose the machine-gun commander is assisted by reconnaissance officers and scouts.

1. The effectiveness of machine-gun fire is influenced by—
 - (a) The positions.
 - (b) The preliminary dispositions, such as securing firing data and organizing suitable information and communication services.
 - (c) Concealment and protective cover.
 - (d) Posting the guns without the knowledge of the enemy.
 - (e) Opening at the proper time a sudden, unexpected, and overpowering fire upon the designated objectives.
2. When necessary that guns be brought into action quickly, promptness in opening fire is the main consideration. No time should be wasted in selecting positions, for in such a case concealment will be out of the question. The machine-gun commander with an eye for ground may, however, make use of the cover afforded in his immediate front and thereby gain some little advantage.

3. All machine-gun commanders invariably precede their commands to the position to be occupied. Every effort should be made to conclude all preliminary arrangements for action prior to the arrival of the guns. Delay in opening fire must not be caused by lack of timely reconnaissance and preparation.

4. The machine-gun commander should accompany the commander of the troops on the preliminary reconnaissance, should be kept constantly informed as to the tactical situation and the plan of action, and should receive early instructions as to the special tasks to be performed by the machine guns.

5. At the earliest opportunity the machine-gun officer reconnoiters and selects the positions for the companies, or sections, in accordance with the instructions he has received and the tactical requirements of the situation. He informs his subordinate commanders when and where they are to report to receive instructions and undertake their own reconnaissance. It is important that the subordinate commanders be given concise and detailed instructions.

6. When the machine-gun commander rides forward on reconnaissance, he instructs the officer left in command on the following points:

- (a) The tactical situation.
- (b) Whether or not the command is to follow at once.
- (c) The time and place for subdivision, if this has not already been covered.
- (d) The route to be followed.
- (e) The rate of march.
- (f) The time for quitting transportation should be specified at this time, if determined, otherwise this information should be sent back later on.

7. As soon as positions are selected and routes determined, agents or scouts may be sent to meet the machine-gun organizations and guide them by the best routes to their positions.

8. Reconnaissance officers accompany advanced troops in order that they may secure early information as to the enemy and give the machine-gun commander detailed information as to the ground, favorable positions, and routes. A reconnaissance officer operating in this manner, as well as one arriving with his commander, examines the neighborhood of the position, locates his own troops and those of the enemy; prepares firing

data; and in general secures the necessary information for his commanding officer and relieves the latter of details.

9. Company reconnaissance officers are habitually under the orders of the machine-gun commander on marches in the presence of the enemy. Scouts may be employed to assist reconnaissance officers and supplement the information secured by them.

RECONNAISSANCE OFFICERS.

327. A reconnaissance officer attached to advanced troops should, as soon as possible after the determination of the enemy's location, submit to the machine-gun commander a report, giving all obtainable information as to the enemy and describing the most suitable positions for the machine guns. This report should be accompanied by a sketch, showing the enemy's position, the selected gun positions, the characteristics of the country intervening between the two, and such other important information as may be readily set forth. The report should embrace information as to—

1. The routes of approach and their practicability.
2. The possibility of approach under cover.
3. Whether or not the gun positions are masked.
4. Cover afforded for the guns.
5. The need of providing artificial cover.
6. Number of guns that may be used to advantage in each locality.
7. Protection for carts.
8. Facility for resupply of ammunition.
9. The most important and immediate targets.
10. Location and strength of the various hostile bodies.
11. Location, or probable location, of the hostile machine guns.

AGENTS.

328. 1. Until all elements of the command are in position, agents are especially careful, even without instruction, to watch for and render information to the captains, officers, men of the various details, and others entitled to it.

2. Under the direction of the machine-gun commander, maintain communication between the various elements of the command.

3. Each agent must—

(a) Keep himself informed as to the location of the elements of the command, so that he can furnish this information to others.

(b) Seek the best routes of approach and study the ground in and around the position, to enable him to guide elements into new positions and to transmit information between the major and neighboring troops.

4. Agents must keep in mind the following:

(a) Before starting with a message they ask the following questions, if their information is not clear:

(1) What is the official designation of the one to whom the message is to be delivered?

(2) Where is the person to whom it is to be delivered?

(3) What is the best and shortest way there, or can I be given a map of the route?

(4) Am I to report back as soon as the message is delivered; if not, to whom shall I report?

(b) Important messages in writing should have their purport understood by the bearer, so that, if necessary, they may be destroyed to prevent their falling into the hands of the enemy.

(c) On the envelope containing a written message is written:

(1) Name of messenger.

(2) Date and hour of departure, as: February 15, 9.40 a. m.

(3) Rate of speed. (F. S. R., par. 36.)

(d) Agents must understand how to ride at the different rates of speed.

(e) If mounted and ordered to deliver a message, and the hour of departure and rate are not indicated, they ask for them.

(f) At all times they keep informed as to the location of their own units.

(g) Note carefully the country traversed.

(h) Move promptly when on an errand. All military persons are required to render assistance in expediting movements of agents.

(i) On reaching destination, call out designation of person sought.

(j) Having delivered message:

(1) Ask if there is any reply.

(2) If receiver forgets to do so, ask that he initial the envelope and record hour and date thereon.

(k) If aware of the nature of the message carried, after delivering it, report any circumstances affecting the situation which have arisen since leaving the sender.

(l) Always repeat a verbal message, word for word, in the presence of the sender, making certain they understand the meaning of the message.

(m) After diligent search, if the person to whom the message is sent can not be found, endeavor to find some other person who can take advantage of the information conveyed. Whether this can be done or not, always report back to the sender with full statement of facts in the case.

(n) Unless otherwise directed, always report back to the sender whether or not the message was delivered.

(o) When a messenger carries a message unsealed or not marked "Confidential" he will permit commanders along the route to read it.

He sees that they initial the envelope and record the hour and date when they read the contents.

When it is desirable that neighboring troops get information from a message sent to a superior that fact is noted on the envelope, and it is the duty of the messenger to see that they get it. He must see that they initial the envelope and record the hour and date thereon.

SCOUTS.

329. Under the direction of the major or company commander—

1. Act as markers at crossroads, etc., where doubt may arise as to the correct route.
2. Usually operate in pairs, under the supervision of a reconnaissance officer.
3. Understand the duties of carrying messages as outlined under "Agents" (328).
4. Regarding reports, scouts must keep in mind the following:
 - (a) Word a report like a telegram, brief and clear, but omit nothing that is important.
 - (b) Write legibly.
 - (c) Names of persons and places should be in block letters.
 - (d) Report facts and avoid vagueness.
 - (e) Report hearsay information as such and state its source.
 - (f) Always give the reason for surmises.
 - (g) A report about the enemy should answer the following questions:
 - (1) By whom seen?
 - (2) How many?
 - (3) What arm?
 - (4) Where?
 - (5) What doing?
 - (6) At what time seen?
 - (h) A report is of no value unless it gives—
 - (1) Designation of sender or sending detachment.
 - (2) Place.
 - (3) Date and hour.
 - (4) Signature and rank.
 - (i) When more than one report is sent from a scout to the same person, the reports should be numbered consecutively.
 - (j) Copies should be kept of all messages.
 - (k) "Negative" reports are of great value at times. They show where the enemy is not and what the scout or patrol is doing.
 - (l) Always use compass bearings in reports—never right or left, except when referring to river banks.
 - (m) A message should state what the scout or patrol is going to do next.

- (n) In making a verbal report, think out beforehand what is to be said; give the report coolly and be certain that it is understood.

SECTION II.—THE MAJOR.

330. The duties described and enumerated for the major apply equally as well to any machine-gun officer commanding machine guns attached to a command.

IN ATTACK.

1. Advancing to the battle field, he marches with the commanding officer in order that he may—
 - (a) Receive information and orders personally from the commander.
 - (b) Personally reconnoiter the ground.
2. After having received his orders the major makes a special reconnaissance, assisted by reconnaissance officers and scouts, in order to obtain information concerning—
 - (a) Exact location and disposition of the enemy.
 - (b) Location and disposition of troops he is supporting.
 - (c) Favorable location for machine-gun companies.
 - (d) The best routes of advance.
 - (e) And such other information as the situation requires.
3. Orders company commanders to report to him, designating the rendezvous.
4. Orders machine-gun companies forward, specifying—
 - (a) The formation they take while advancing.
 - (b) Where they will halt.
5. Assembles company commanders.
6. In his orders to them he covers—
 - (a) Information of the enemy.
 - (b) Position of supporting troops, neighboring troops, and guns.
 - (c) The general object to be obtained.
 - (d) The special problem for each unit, including—
 - (1) The number of guns placed in action.
 - (2) The number of guns placed in reserve.
 - (3) Designation and apportionment of the target.

- (e) The point, or time, if possible, at which fire is to be opened.
- (f) Orders for flank protection and reconnaissance, unless covered by orders from higher authority.
- 7. Orders communication with—
 - (a) Guns going forward.
 - (b) Guns in reserve.
 - (c) Firing line.
 - (d) The commander.
- 8. Arranges the supply of ammunition.
- 9. Announces his position and that of the higher commander.

ARRANGES FOR EVENTS SUBSEQUENT TO THE ATTACK.

- 1. When the attack is successful:
 - (a) Designates units that are to—
 - (1) Continue firing on the retreating enemy.
 - (2) Watch for, and hinder, any re-forming of the enemy.
 - (3) Place curtain of fire in front of captured position.
 - (b) Designates units that are to move forward as soon as the captured position is secured.
 - (c) Gives those units the following instructions:
 - (1) When they shall advance.
 - (2) By what route.
 - (3) Approximate positions they must take.
 - (4) Approximate sectors they must cover.
 - (5) Whether or not they sacrifice their guns if necessary to hold the captured ground.
 - (6) What communications to establish.
 - (d) Arranges for ammunition supply for guns moving forward.
- 2. When attack is unsuccessful—
 - (a) Designates the guns that are to cover the retirement of the firing line by—
 - (1) Covering the enemy's fire position.
 - (2) Placing a curtain of fire in front of retreating troops.
 - (b) Gives explicit orders that these guns will not retreat until ordered.

- (c) Selects successive positions in rear, in case he is forced to retire.

DURING THE ATTACK.

- 1. Watches closely the progress of events by maintaining communication with—
 - (a) The commanding officer.
 - (b) The guns in action.
 - (c) Forward observers.
 - (d) The guns in reserve.
- 2. In the absence of instructions from the commanding officer, makes such changes as he considers necessary to meet the changing tactical situation.
- 3. Supervises ammunition supply.

IN DEFENSE.

- 331. 1. Receives orders from the commanding officer covering—
 - (a) Information of the enemy.
 - (b) Information of friendly troops.
 - (c) The general plan of the commander.
 - (d) The tasks assigned the machine gun.
 - (e) Arrangements for supplying ammunition to combat trains.
 - (f) Arrangements for supplying rations and forage.
- 2. The major then thoroughly reconnoiters, with the assistance of reconnaissance officers and scouts, the sector his battalion is to cover.
- 3. This reconnaissance should cover—
 - (a) Location of the firing line.
 - (b) The terrain in front and rear.
 - (c) All avenues of approach.
 - (d) All dead space.
 - (e) Favorable positions for machine guns.
 - (f) Communication laterally and to the rear.
- 4. Arranges for establishing communication—
 - (a) Within his command.
 - (b) With the firing line.
 - (c) With the commanding officer.

5. Specifies place for carts and animals.
6. Assisted by the captains, plans and orders constructed the necessary—
 - (a) Cover for gun crews.
 - (b) Obstacles.
 - (c) Communicating trenches.
 - (d) Splinter and bomb proofs.
 - (e) Ammunition depots.
7. Arranges for mutual supporting fire—
 - (a) Within his sector.
 - (b) With adjacent machine-gun commanders.
8. Sees that observers are stationed with the firing line.

ARRANGES FOR EVENTS SUBSEQUENT TO THE ENEMY'S ATTACK.

1. When assault by the enemy is unsuccessful—
 - (a) Directs that all available fire power be brought to bear upon the retreating enemy.
2. When assault by the enemy is successful—
 - (a) Designates the guns to cover the retreat by—
 - (1) Enfilading, fire, and communicating trenches.
 - (2) Placing curtains of fire across the position.
 - (3) Preventing the bringing up of machine guns and supports.
 - (b) Gives explicit orders that guns will not retire unless ordered.

DURING THE ENEMY'S ATTACK.

1. Watches closely the progress of events by maintaining communication with—
 - (a) The commanding officer.
 - (b) The guns in action.
 - (c) Forward observers.
 - (d) The guns in reserve.
2. In absence of instructions from the commanding officer, makes such changes as he considers necessary to meet the changing tactical situation.
3. Supervises ammunition supply.

SECTION III.—BATTALION STAFF.

332. Battalion adjutant, battalion sergeant major, and supply sergeant accompany the major.
- For the duties of signalmen and agents, see paragraph 328.
- They assist the major as directed, by—
1. Reconnaissance.
 2. Maintaining contact with brigade or division headquarters.
 3. Maintaining contact with supporting guns.
 4. Receiving and sending visual signals.
 5. Carrying messages.
 6. Observing the course of events.
 7. Keeping copies of all orders, messages, and other data necessary for his war diary.

SERGEANT MAJOR.

333. Under the direction of the major—
1. Marks the route to be followed by the battalion.
 2. Ascertains from the adjutant or major—
 - (a) The rendezvous at which to assemble the captains, and instructs a signalman to watch for and guide them to it.
 3. Superintends the work of the signal corporal and signal private in establishing communication with the various gun positions. It is a general rule that the buzzer wire should be laid from *rear* to *front*. The hand reel will then be in front, and if a forward movement is made the length of the wire can easily be extended.
 4. In general charge of all messages received or sent by flag or messenger.
 - (a) Keeps a chronological record of all important messages received or sent.
 - (b) Supervises the sending of messages to reconnoitering parties and observers sent to the front.

SUPPLY SERGEANT.

334. Under the direction of the major—
1. Is responsible for the battalion headquarters property.
 2. Commands the battalion headquarters, ration and baggage wagon, and ration cart.

STABLE SERGEANT.

335. Under the direction of the senior train lieutenant—

1. Acts as wagonmaster for the train.
2. Takes prompt measures to avoid delays due to breakages, etc.
3. Is responsible to the train lieutenant for the care of the animals.

THE SIGNAL CORPORAL.

336. 1. Under general supervision of the battalion sergeant major, has charge of, and is responsible for, all signal equipment of the battalion, makes such tests and repairs as he may be authorized to make, and at the first opportunity reports to the adjutant all trouble which he can not remedy.

2. Commands the battalion signalmen on the march.
3. Learns from the leading company commander when communication is to be established and at once reports to the major.
4. Under the direction of the sergeant major, establishes communication.
5. Acts as signalman at the battalion station, reporting to the adjutant or major when communication with the various units is established or broken.
6. Learns from the adjutant or major what artificial cover is required for the station, and, assisted by signalmen and agents, constructs it at the first opportunity.

SIGNAL PRIVATE.

337. 1. Assists the signal corporal in establishing communication.

2. Assists in constructing artificial cover for the station.
3. Assists, or records, for the signal corporal.

SECTION IV.—THE CAPTAIN.

IN ATTACK.

338. 1. When the machine-gun company is not a part of a machine-gun battalion the duties prescribed for the major apply.

When the company is part of the machine-gun battalion, the position of the captain is with his company, and is such that—

- (a) He can best control his company.
- (b) He can keep in easy communication with battalion headquarters.
2. Conducts his company on the march to the point where carts must be left behind.
3. Receives orders from the major covering the following:
 - (a) Information of the enemy.
 - (b) Position of supporting troops, neighboring troops, and guns.
 - (c) The general object to be obtained.
 - (d) The special mission for his company and the sector to be covered.
 - (e) The point or time at which fire is to be opened.
 - (f) Orders for flank protection and reconnaissance, unless covered by orders from higher authority.
 - (g) The major's position and that of the next higher commander.
4. Selects position for combat trains.
5. Arranges for ammunition supply by—
 - (a) Notifying his platoon commanders to keep him informed as to the position of their belt-filling stations.
 - (b) Causing first sergeant to establish, with the ammunition carts, communication between the belt-filling stations and the combat train. (Pl. VII.)
 - (c) Giving instruction to the train lieutenant to keep ammunition carts replenished with ammunition.
6. Reconnoiters, with the assistance of his reconnaissance officer and scouts, the sector assigned him in order to obtain detailed information as to the—
 - (a) Exact location and disposition of the enemy.
 - (b) Location and disposition of troops he is supporting.
 - (c) Favorable positions for machine guns.
 - (d) The best routes of advance.
7. Selects gun positions with a view to using cross and flanking fire. These positions should have—
 - (a) Clear field of fire.

- (b) Sufficient height above, or distance from the flank of the firing line, so as not to endanger the attacking troops.
- (c) Cover to the front and protection from the flanks.
- (d) Communication laterally and to the rear.
- 8. Determines the number of guns to be placed in the sector and the number to be kept in support.
- 9. Assigns tasks to the platoon or sections, being careful that neighboring guns afford mutual supporting fire (not necessarily adjacent guns).
- 10. Gives instructions covering:
 - (a) Where the guns are to be held under cover.
 - (b) When the positions selected are to be occupied.
 - (c) When fire is to be opened.
 - (d) What cover, if any, is to be constructed.
 - (e) The communication to be established. (Pl. VIII.)
 - (f) The position of the captain and the major.

ARRANGES FOR EVENTS SUBSEQUENT TO THE ATTACK.

- 1. When the attack is successful:
 - (a) Designates guns that are to—
 - (1) Continue firing on the retreating enemy.
 - (2) Watch for, and hinder, any re-forming of the enemy.
 - (3) Place a curtain of fire in front of captured position.
 - (b) Designates guns that are to move forward as soon as the captured position is secured.
 - (c) Gives these units the following instructions:
 - (1) When they shall advance.
 - (2) By what route they shall advance.
 - (3) Approximate positions they must take.
 - (4) Approximate sectors they must cover.
 - (5) Whether or not they sacrifice their guns if necessary to hold the captured ground.
 - (6) What communications to establish.
 - (7) What arrangements to make for supplying ammunition to guns moving forward.

- 2. When the attack is unsuccessful:
 - (a) Designates the guns that are to cover the retirement of the firing by—
 - (1) Covering the enemy's fire position.
 - (2) Placing curtain of fire in front of retreating troops.
 - (b) Gives explicit orders that these guns will not retreat until ordered.
 - (c) Selects successive positions in rear for use in case the line continues to retire.

DURING THE ATTACK.

- 1. Observes fire effect.
- 2. In the absence of instructions from the major makes such changes as he considers necessary to meet the changing tactical situation.
- 3. Is responsible for the supply of ammunition. (Pl. VII.)
- 4. Maintains communication with (see Pl. VIII)—
 - (a) The firing line.
 - (b) The major.
 - (c) The guns.

IN DEFENSE.

339. Deliberate occupation of position.

- 1. Receives orders from major. See paragraph 330.
- 2. Thoroughly reconnoiters the terrain in the neighborhood of the position.
- 3. Selects gun positions which fulfill as nearly as possible the following requirements:
 - (a) Open field of fire in the direction in which the fire is to be used (to the front, or flank, or parallel to the firing line).
 - (b) Concealment from the front, flank, and overhead.
 - (c) Guns can be escheloned.
 - (d) Guns at least 30 yards apart.
 - (e) Fire not masked by our troops, if position is in rear of firing line.

- (f) Fire from them can be brought to bear on—
- (1) All avenues of approach by the enemy.
 - (2) Places where enemy is apt to assemble for the attack.
 - (3) Such points as will cover the withdrawal of our troops if defeated.
 - (4) All dead spaces in front of the firing line.
4. Selects alternate gun positions.
 5. Notifies the firing line if overhead fire is to be used.
 6. Assigns sectors and fronts to be covered.
 7. Sends observer, or observers, forward with the firing line.
 8. Directs the preparation of range cards.
 9. Specifies the kind of cover to be constructed.
 10. Arranges for communication with (see Pl. VIII)—
 - (a) The gun positions.
 - (b) The firing line.
 - (c) The machine-gun commander.
 11. Arranges for ammunition supply by establishing supply service between the combat train and the gun positions (Pl. VII).

DURING THE ENEMY'S ATTACK.

1. Determines when and by what guns fire is to be opened.
2. Makes necessary changes to meet the tactical situation, unless otherwise ordered by the major.
3. Puts his reserve guns into action if the situation warrants it.
4. Keeps in constant communication with—
 - (a) The firing line.
 - (b) The major.
 - (c) His guns.
5. Insures a continuous supply of ammunition.
6. Arranges for the necessary care of the wounded.
7. Provides for replacing casualties.

EVENTS SUBSEQUENT TO THE ATTACK.

1. When the enemy's attack is unsuccessful:
 - (a) Directs all available fire power upon the retreating enemy.

2. When the enemy's attack is successful.
 - (a) Directs his guns to cover the retreat of the firing line by—
 - (1) Infilading communicating and fire trenches.
 - (2) Placing curtains of fire across the position.
 - (3) Preventing the bringing up of machine guns and supports.

NOTE.—Arrangements must be made previous to the attack and each gun given explicit instructions as to its duty. The captain will rarely be able to command his guns in this situation, but will rely upon the platoons, sections, and gun squads carrying out the preconceived plan of action.

SECTION V.—FIRST LIEUTENANT AND RECONNAISSANCE OFFICER.

340. His duties, when the captain is absent on reconnaissance, are to—

- (a) Command the company.
- (b) Conduct the company to the position selected.
- (c) Make all necessary preparation previous to taking up the position.
- (d) Verify the systems of communication and supply.
- (e) Supervise the construction of cover, obstacles, etc.

341. As reconnaissance officer, he is charged with—

- (a) Securing by personal reconnaissance and the assistance of scouts such information of the enemy, our own troops, or the terrain as is desirable or ordered.
- (b) Supervising the work of scouts, observers, etc.
- (c) Securing firing data, sketches, and other information required for the direction and conduct of fire.
- (d) Observing the field of action, watching for movements of the enemy and our troops that may affect the situation, and keeping his commanding officer informed as to changes in the situation.

NOTE.—For detailed duties of reconnaissance officers and scouts, see paragraphs 327–329.

SECTION VI.—ENLISTED PERSONNEL.

FIRST SERGEANT.

342. Under direction of the captain—

- (a) Selects position for the carts.
- (b) Conducts carts to position selected.
- (c) Establishes communication with belt-filling stations established in rear of gun positions.
- (d) Insures continuous supply of ammunition to belt-filling stations from combat train. (Pl. VII.)
- (e) Places animals and carts under cover.
- (f) Supervises construction of necessary cover for carts and drivers.

THE SERGEANT.

(Company range taker.)

343. 1. Assists reconnaissance officer in preparing—

- (a) Reports.
- (b) Sketches.
- (c) Range cards.
- (d) Firing data.

2. Commands company agents and scouts.

3. Is responsible for the care and adjustment of the range finder.

4. Obtains ranges required by the captain and reconnaissance officer.

THE CORPORAL.

(Company clerk.)

344. Under the direction of the captain, attends to the details of company administration.

THE SIGNAL CORPORAL.

345. Under the captain's direction—

- (a) Is responsible for all signal property.
- (b) Makes such repairs as he may be authorized to make,

(c) Reports to the captain all trouble that he can not remedy.

(d) Commands the company signalmen.

(e) Carries the two buzzers.

(f) Establishes buzzer stations.

(g) Assisted by the signal private—

(1) Lays and takes up buzzer lines.

(2) Sends and receives messages.

(3) Keeps record of important messages sent and received.

SIGNAL PRIVATE.

346. Detailed from the company signalmen to assist the signal corporal—

(a) In caring for the signal property.

(b) By carrying the hand reel.

(c) By laying buzzer wire.

(d) In establishing buzzer station.

(e) In receiving and sending messages.

(f) In recording messages sent and received.

COMPANY BUGLERS.

347. They accompany the captain and—

(a) Give commands ordered by the captain.

(b) One acts as horse holder for the captain.

(c) Act as messengers when directed.

SECTION VII.—THE PLATOON LEADER.

IN ATTACK.

348. 1. The platoon leader takes a position from which he can control his platoon and watch the captain for signals.

2. Advancing to the battle field, marches at the head of his platoons.

3. Receives orders from the company commanders covering the points enumerated in paragraphs 338 and 339.

4. If time is available, turns the platoon over to the senior leader, and, with the platoon range taker, advances to the position selected for his guns.¹

5. Selects the exact positions for his guns and alternate positions.

6. Assisted by range taker, obtains ranges and prepares range cards.

7. Makes any necessary reconnaissance.

8. Informs section leaders of the—

(a) Situation.

(b) Task assigned the platoons.

(c) Tasks assigned the sections.

(d) The positions to be taken.

(e) The cover to be constructed.

(f) Arrangements for signal communication. (Pl. VIII.)

(g) Arrangements for ammunition supply. (Pl. VII.)

9. At the proper time conducts the platoon to positions.

10. Supervises the construction of cover.

11. Verifies targets and sectors assigned.

12. Specifies the kind of fire to be used.

13. Gives command for opening fire.

DURING THE ATTACK.

1. Observes fire effect.
2. Makes changes in ranges and kinds of fire where necessary.
3. Keeps the company commander informed as to the progress of the action in his front.
4. Insures ammunition supply.

EVENTS SUBSEQUENT TO THE ATTACK.

1. When the attack is successful, he carries out the plan given him by the company commander (338).
2. When the attack is unsuccessful, he carries out the plan outlined by the company commander (338).

¹ He may require the section leaders to accompany him.

IN DEFENSE.

(Deliberate occupation of position.)

349. 1. Receives orders from company commander.

2. Assists the company commander—

(a) Reconnoiter the position.

(b) Select gun positions.

3. Under the direction of the company commander—

(a) Supervises construction of—

(1) Emplacements.

(2) Obstacles.

(3) Communicating trenches.

(4) Caves for ammunition near emplacements.

(b) Prepares—

(1) Range cards.

(2) Data for night firing.

(3) Data for overhead fire.

(4) Data for indirect fire.

(c) Sends observer forward.

(d) Arranges for communication between platoon and observer and platoon and captain. (Pl. VIII.)

(e) Specifies the kind and rate of fire.

(f) Gives commands for opening fire.

DURING THE ATTACK.

1. Observes fire effect.
2. Notifies the company commander immediately of any new targets in his front.
3. Shifts the fire *within* his sector in accordance with the changing situation.
4. Insures ammunition supply. (Pl. VII.)
5. Replaces casualties.
6. Provides for the care of the wounded.

EVENTS SUBSEQUENT TO THE ATTACK.

1. When the enemy's attack is unsuccessful, carries out the plan of action previously arranged (339).

2. When the enemy's attack is successful, carries out the plan arranged to cover that contingency (339).

SECTION VIII.—THE SECTION LEADER.

IN ATTACK.

350. 1. Takes a position from which he can—
 (a) Control the squads constituting his section.
 (b) Observe the target and fire effect.
 (c) Observe the platoon leader for signals.
2. Receives orders from platoon leader.
3. Conducts his section to the position indicated by the platoon leader.
4. Establishes belt-filling station or stations with Nos. 5 and 6 of the squads.
5. Carries out the platoon leader's orders by providing for—
 (a) Concealment.
 (b) Cover.
 (c) Communication.
6. Obtains data for kind of fire used.
7. Selects aiming marks when targets are indistinct or masked.
8. Announces sight settings (range and windage) and assigns sectors to the gun squads.
9. Specifies the kind of fire (155).
10. Checks laying of the guns when overhead fire is used.
11. When his squad leader signals "Ready," he signals the platoon leader "Ready."
12. When the platoon leader signals "Commence firing," repeats the signal to the corporals.

DURING THE ATTACK.

1. Observes fire effect.
2. When the section is not firing, insures that the front assigned is kept under constant observation.
3. Changes sight settings when necessary.
4. Changes method of firing when necessary or ordered.
5. Assures himself that the signaller constantly observes the platoon leader for signals.

6. Permits no members of his section, other than Nos. 3 and 4, to go to the rear for ammunition.
7. When casualties occur in his section, signals the belt-filling stations for extra men.
8. Carries out such advances as are necessary.
9. When he reaches a new position, immediately upon opening fire, establishes contact with units to his right and left.
10. If on a flank, insures that he will receive timely information of any changes in that direction.

EVENTS SUBSEQUENT TO THE ATTACK.

1. When the attack is successful, carries out the plan of action previously arranged.
2. When the attack is unsuccessful, carries out plan provided for that contingency.

IN DEFENSE.

(Deliberate occupation of position.)

351. 1. Receives orders from the platoon leader.
2. Directs the construction of:
 (a) Emplacements.
 (b) Obstacles.
 (c) Communicating trenches.
 (d) Caves for ammunition near emplacements.
3. Assists the platoon leader in preparing:
 (a) Range cards.
 (b) Data for night firing.
 (c) Data for overhead fire.
 (d) Data for indirect fire.
4. Arranges for communication with platoon leader.
5. If necessary, sends observer forward.
6. Orders the rate of fire.
7. When the squads signal "Ready," repeats the signal to the platoon leader.
8. Gives command for opening fire.

DURING THE ATTACK.

1. Observes fire effect.
2. Immediately, upon the appearance of a new target in his sector, notifies the platoon leader.
3. Shifts the fire within his sector in accordance with the changing situation.
4. Watches carefully the ammunition supply.
5. Replaces casualties.
6. Provides for the care of the wounded.

EVENTS SUBSEQUENT TO THE ATTACK.

1. When the enemy's attack is unsuccessful, carries out the plan previously arranged.
2. When the enemy's attack is successful, carries out the plan arranged for that contingency.

SECTION IX—THE CORPORAL.

IN ATTACK.

352. 1. The corporal of the gun squad is in direct charge of the squad in enforcing fire discipline, and assists in fire control.
2. When the gun is in action, the corporal takes a position from which he can observe the fire of the gun and communicate with his section leader.
 3. Receives orders from the platoon or section leader.
 4. Constructs such cover as time will permit.
 5. Sees that communication is established with the section leader.
 6. Issues fire order.
 - (a) Announces range and deflection.
 - (b) Takes the target assigned, or that portion of the section's target which corresponds to the position of the squad in the section.
 - (c) Designates the target, or aiming mark, to his gunners.
 - (d) Verifies sight setting.

- (e) Announces kind of fire.
- (f) When his squad is ready, signals *Ready*. At the platoon or section leader's order, or signal, to *commence firing* he gives the proper command for his gunners to open fire.
- (g) If a time has been set for opening fire, he opens fire at the specified time without command.
7. Carefully instructs his squad covering—
 - (a) The passing of orders and signals.
 - (b) The plan of action to be followed during the attack.
 - (c) The plans of action covering the period subsequent to the attack.

DURING THE ATTACK.

1. Insures that the gunner fires at the designated target.
2. Prevents slighting of indistinct or invisible portions of the target.
3. Prevents changing fire to unauthorized targets.
4. Maintains constant observation to the front for appearance of the enemy and to observe effect of fire.
5. Enforces prompt obedience to orders to *suspend* or *cease firing*.
6. Makes men use the ground to full extent for concealment.
7. Must know thoroughly the drill regulation signals and have a practical knowledge of handling machine-gun fire.
8. Checks every breach of fire discipline, abates excitement, and prevents any man from leaving the squad.
9. When necessary, takes command of the section, notifying the gunner to take command of the squad.

IN DEFENSE.

353. 1. Receives orders from the section leader.
2. Requires his squad to construct—
 - (a) Emplacements.
 - (b) Obstacles.
 - (c) Communicating trenches.
 - (d) Caves for ammunition near emplacements.

3. Inspects—
 - (a) His machine gun and tripod.
 - (b) The tool box.
 - (c) The belt-filling machine.
 - (d) All belts.
 - (e) Water box.
4. Establishes belt-filling station near gun emplacement.
5. Carefully instructs his squad as to—
 - (a) The squad sector or sectors.
 - (b) The kinds of fire to be used.
 - (c) The time for opening fire.
 - (d) The passing of orders and signals.
 - (e) The rules to be observed by the sentinel or sentinels at the gun.
6. Establishes aiming marks for indirect fire and night firing.
7. Outlines the plans of action covering the period subsequent to the assault.
8. During the enemy's attack carries out the duties described for him "During the attack."

SECTION X.—THE PRIVATE.

IN ATTACK AND IN DEFENSE.

354. The private must be trained—
 1. To recognize targets from description.
 2. To designate targets.
 3. To count distant groups of objects or beings.
 4. To use rear sight in designating targets.
 5. To use horizontal clock system, singly or in combination with vertical clock or rectangular systems, in designating targets.
 6. To set sights quickly and accurately as ordered.
 7. To aim carefully and deliberately from habit, and to maintain the correct hold.
 8. To fire at the rate ordered.
 9. To fire at the designated target.
 10. To continue firing on the designated target and to change therefrom only when ordered.
 11. Not to slight invisible or indistinct parts of the target.

12. To maintain constant observation to the front.
13. To utilize folds of ground for concealment.
14. To select firing positions.
15. To understand effect of various backgrounds with respect to visibility of targets presented by the enemy or by himself.
16. To fire the gun from all positions; behind hillocks, trees, heaps of earth, rocks, depressions, gullies, ditches, doorways, windows, etc.
17. To obey promptly orders from his corporal to *suspend or cease firing*.
18. To watch closely for the expected target after having suspended firing.
19. To obey promptly all orders from his squad leader.
20. To transmit firing data rapidly and accurately.
21. To have confidence in his own ability to hit.
22. To maintain silence except when transmitting or receiving firing data.
23. To retain presence of mind.
24. Not to waste ammunition.
25. Never to care for dead or wounded during action.
26. That the first rule of every machine gunner should be to remain at his post and never quit his gun.
27. To know how to disable his gun quickly and effectively when necessary.
28. *Never to fire until he understands what the target is, at what part he is to fire, and with what sight setting.*

SECTION XI.—THE GUNNERS.

NO. 1.

355. 1. Carries the gun.
2. Personally cleans and looks after the gun, insures that the mechanism is working smoothly and that water jacket is full.
3. Observes his own fire when possible.
4. Is responsible for the operation of the gun and takes such steps as are necessary to insure proper functioning of the mechanism at all times.
5. Sets sight as directed by the corporal.
6. Directs kind of fire ordered.

7. Corrects stoppages.
8. Sees that the tool and spare part boxes are conveniently within his reach.

NO. 2.

356. 1. Carries tripod.
2. Loads the gun.
3. Sees that the belts being fed into the gun are clean and that the cartridges are properly loaded in belt.
4. Watches roller handle in order to diagnose stoppages.
5. In case of a stoppage, assists No. 1 in reducing it.
6. Sees that ammunition is supplied in the necessary quantities by Nos. 3 and 4.

NO. 3.

357. 1. Carries two ammunition boxes.
2. Supplies ammunition to No. 2.

NO. 4.

358. 1. Carries tool box, condensing device, and one ammunition box.
2. Returns emptied belts to belt-filling station.
3. Assists No. 3 in supplying No. 2 with ammunition.

NOS. 5 AND 6.

359. 1. Establish belt-filling station.
2. Supply filled belts to Nos. 3 and 4.

NO. 7.

360. 1. Is responsible for the gun mule, cart, and equipment.

NO. 8.

361. 1. Is responsible for the care of the ammunition mule, cart, and ammunition.
2. Supplies ammunition to the belt-filling station.
3. Refills his cart from the combat train.

SECTION XII.—THE PERSONNEL WITH THE TRAINS.

SECOND LIEUTENANT IN CHARGE OF TRAINS.

(Active operation.)

362. 1. Under the direction of the captain he is responsible for the supply of—
 - (a) Ammunition.
 - (b) Rations and forage.
 - (c) Equipment.
2. Commands the combat train.
3. During action maintains ammunition supply between the field trains and ammunition carts.
4. Sees that the personnel and matériel of the combat train are cared for.
5. Reports to the captain any break in the line of supply.

MESS SERGEANT.

363. Under the direction of the train lieutenant he commands the kitchen wagon while in the field and is responsible for the preparation and delivery of meals to the men while on the march and during engagements.

SUPPLY SERGEANT.

364. Under the direction of the train lieutenant—
 1. Commands the ration and water carts.
 2. Is responsible for the care of animals.
 3. On the march and during engagements, maintains supply of rations and water.

STABLE SERGEANT.

365. Under the direction of the train lieutenant—
 1. Commands the combat train.
 2. Is responsible for the care and preservation of ammunition in the combat wagon.

IN ATTACK AND IN DEFENSE.

366. 1. Establishes communication with ammunition carts.
2. Maintains a service of supply between the ammunition trains and the ammunition carts.

PART IV.

CARE AND HANDLING OF ANIMALS.

SECTION I.—GENERAL PRINCIPLES.

367. It is essential that a machine-gun officer have a thorough and practical knowledge of how to care for, condition, and train the animals under his charge. Deficiency in this knowledge will result in material and avoidable wastage of animals in time of war. The animal requires intelligent care in order that his health and strength may be preserved; he must be in hard and physically fit condition, else the amount of useful work he is able to perform will be greatly reduced and his power of resistance to injury and disease lowered; and he requires careful training in order that he may work intelligently and obediently and with the minimum expenditure of muscular and nervous energy. Officers should make themselves thoroughly acquainted with the physiology of the animals under their charge and with the effects of different methods of treatment, changes of diet, etc., upon the systems and power of endurance of these animals. In addition, they should have a familiar knowledge of the symptoms and treatment of the diseases that are common to horses and mules, what to do in emergencies, and a good knowledge of the effects of medicines issued. They should also possess a practical understanding of the principles of horseshoeing. The officer in charge of horses and mules must carefully instruct his men in the treatment, stabling, watering, feeding, grooming, and exercising of the horses, and by continuous supervision and instruction insure himself that his instructions are thoroughly understood and fully carried out.

SECTION II.—GENERAL RULES FOR THE CARE OF ANIMALS.

368. All men who are required to work with horses and mules must thoroughly understand the following rules for their care: Before entering an animal's stall and in coming up behind him, speak to him gently and approach quietly and without sudden or abrupt movement.

An animal must never be struck or threatened about the head. Such treatment quickly makes him head shy and renders his proper control difficult and exasperating.

Never kick, strike, or otherwise abuse an animal. On rare occasions punishment may be necessary, but it must be administered immediately after the offense has been committed, and then only in a proper manner with whip or spur and never in the heat of anger.

Before taking an animal out, carefully examine him and make sure that he is fit for work. In particular—

Has he eaten his food, especially his grain?

Is his breathing normal?

Are his droppings normal?

Are there any sores, lumps, or injuries on his back or shoulders that might be irritated by harness or saddlery?

Look to his feet:

1. Are they clean? See that there are no stones or nails in them.

2. Are the shoes tight? A loose shoe greatly increases the concussion on the foot. Does he act lame when taken from the stable?

Give him an opportunity to drink before leaving his picket line or stable and before putting the bit in his mouth.

In cold weather warm the bit by blowing and rubbing it before putting it in the animal's mouth.

After taking the animal out, always walk him the first mile to start the circulation in his legs. Habitual disregard of this rule leads to foot and leg trouble that will render him unserviceable before his time.

Always walk the last mile or check up sufficiently to bring your animal in cool and breathing naturally.

TO COOL A HEATED ANIMAL.

369. To be certain of no ill effects, an animal brought to the stable in a heated condition must be cooled out and dried before he is left tied up in his stall. To cool the animal, walk him about slowly under a blanket if the air is chilly. Occasionally interrupt the walking by giving him a good brisk rub down and two or three swallows of water. Walking is especially valuable, because this gentle exercise keeps the muscles moving slowly and so assists in working any excess of blood out of them and out of his vital organs. The brisk rubbing dries him and assists in bringing the blood back to the skin, and so aids in restoring the circulation to the normal. If the surface of the body becomes chilled, or if the cooling out is too sudden, the congestion existing in the lungs or in the feet may not be relieved, and pneumonia, laminitis, or other troubles will then result. A sudden stoppage of hard work is always bad for the feet and is very liable to result in laminitis. The water given in small quantities slowly cools the horse internally and so aids in sending the blood back to the surface and restoring the normal circulation and temperature. *The cooling-out process must always be a gradual one.* To throw water on any part of a heated horse is particularly dangerous.

It is very refreshing to the animal to have his eyes, nostrils, hock, and inside of his hind quarters sponged with cool water.

When he comes in wet with rain he should be scraped, then blanketed, and his head, neck, loins, and legs rubbed. If the weather is cold, an extra blanket should be put on for 20 minutes. The wet blanket should be changed when he dries.

Never wash the legs. This practice is one of the surest means of causing scratches. The legs should be rubbed dry and bandaged loosely with thick bandages. Scraps of gunny sacks are satisfactory for this purpose. It is far more important to have the legs warm and dry than clean. The best method of treating muddy legs in order to avoid scratches is to bandage them; this keeps them warm until they are dry, and then brush them clean.

Never leave the animal for the night until he is clean, especially around his legs, pasterns, and feet.

SECTION III.—THE STABLE PERSONNEL.

370. The stable personnel includes the stable sergeant, the horseshoer, the farrier, the saddler, the drivers of field and combat vehicles, and the stable detail.

371. The lieutenant in command of the train is responsible to the captain for all duties in connection with the care of the horses and mules, the stables and stable management. He is assisted by the stable sergeant, who has immediate charge of the stable personnel, of the police and sanitary condition of the stable, corral and picket line, and is the custodian of the forage and the stable property. He will keep records of forage, of the property in his charge, and of the animals.

Whenever the stable sergeant is absent, the next ranking member of the stable personnel will assume his duties.

Sufficient men are detailed as stable police to perform the general police and to remove all manure as it is dropped, either in stables, on the picket line, or in the paddocks, during the day. The stable police also assist in the feeding, watering, and bedding of the horses.

SECTION IV.—STABLE RULES.

372. A bulletin board will be kept at the stable showing the total number of animals on hand, the number of sick, and the number for duty.

A record will be kept of the departure and return of all animals, except those participating in habitual formations or duties, and the stable sergeant will satisfy himself that persons taking out animals have proper authority to do so.

Individual men returning from mounted duty or pass will report to the stable sergeant, who will see that the animal is properly cared for.

In the morning stalls are cleaned and the stables policed under the direction of the stable sergeant.

The bedding is taken up, carefully shaken out, and assorted. All parts of the bedding which can be used again are taken to the bedding racks and spread thereon for a thorough drying; parts which can not be used again are sent to the manure heap.

Special attention is necessary in this matter, as the allowance of straw, 100 pounds per month per animal, is insufficient under most favorable conditions. In the evening the dried bedding, mixed with such fresh bedding as may be necessary, is laid down. The bed must be soft and even with the thickest part toward the manger.

Manure and other refuse must not be allowed to accumulate in or near the stable. It will be disposed of daily in the manner prescribed by the commanding officer.

Stables will be policed daily.

Except at night, when horses are bedded down, manure and urine will be removed at once and not allowed to accumulate.

Smoking in or near stables will be prohibited, and signs to that effect posted.

One or more lights will be kept burning during the night in each stable.

Animals will be assigned permanent stalls, by section, in the usual order of their formation. They will be placed on the picket line in the same order. Over each stall will be placed the name and number of the animal and the name of the man to whom assigned.

The presence of unauthorized persons about the stables at any time is prohibited. This applies to men of the organization who have no duties to perform as well as to strangers. The stable sergeant is charged with enforcing this rule.

SECTION V.—THE PERMANENT STABLE.

373. In a stable with a loft, ventilation from the top is always insufficient, and the openings in the sides, above the horses, should be kept open except when it is necessary to close those on the windward side to keep out rain or snow.

Doors should be kept open whenever practicable and every precaution taken to have good ventilation.

374. Foul air and dampness are the causes of many diseases of the horse; hence the importance and economy of spacious, clean, dry, and well-ventilated stables.

It is impossible to give the horse too much fresh air, even in the coldest weather. The stables should be considered as merely a shelter from storms. The more nearly the air of the stables approaches the purity and temperature of the outside air the

more nearly are the stables adapted to the health and comfort of the animals.

A practical and satisfactory test that a stable is properly cleaned and ventilated is that on entering it the sense of smell detects no apparent change from the air outside.

Entrances to the stable should be protected by bars or lines to prevent the escape of animals.

375. Stall floors should be kept in thorough repair at all times. If of wood, broken planks must be immediately replaced and spikes kept driven well into the wood. If of dirt, only clay should be used. Gravel, ashes, or sandy earth is not suitable.

The sloping of the stall floor from the manger is injurious and uncomfortable for the animal, causing him to stand in an unnatural position, with the forelegs higher than the hind ones. It is natural for a horse to paw a hollow for his front feet, so that he can stand with his hind quarters elevated.

Fresh clay will be kept on hand and all holes in the floor promptly filled and tamped.

376. Saddle and harness rooms will be kept clean and their contents assigned to places and kept in order.

If practicable, all woodwork within reach of the horses should be protected with sheet metal or painted with a thin coat of gas tar; other woodwork and brick should be painted a light shade and then kept clean and free from dust.

Feed boxes must be kept clean; they should be washed from time to time with dilute vinegar and always after feeding bran mash or other soft food.

During the day, except in very cold or stormy weather, the animals, when not being used or fed, should stand at the picket line or in the paddocks. In hot climates, however, if there is not sufficient shade on the picket line or in the paddocks, it is better to keep them in the stables during the heat of the day.

377. In permanent or semipermanent camps cantonment stables are built when practicable. They are usually sheds without sides, wide enough for a double row of stalls. The double stalls should not be less than 9 feet wide by 10 feet deep.

Ample ditches should be dug back of the stalls. All rules for the management of the permanent stable that are applicable apply equally for the cantonment stable.

SECTION VI.—THE PICKET LINE.

378. Permanent picket lines of 1½-inch manila rope or of ½-inch steel wire cable are erected near every stable, to which animals are tied for fresh air, for grooming, and to permit the stable to be cleaned.

The picket-line supports should be posts not less than 6 by 8 inches by 9 feet long, spaced 50 feet apart, the end posts securely guyed. The line is run through the posts. One end of the line should be provided with a means of taking up slack in the line.

379. Shallow trenches should run along each side of the line behind the animals to carry off the rain and the ground upon which the animals stand filled and graded with a slight slope from the line.

380. The picket line ground is cleaned and swept daily and kept smooth, in the manner indicated for stall floors.

381. Troops in camp may have no stable, in which case animals are cared for entirely on the picket line and in the corral. If space of ground permits, a corral may be built adjoining the picket lines. The corral fence is built from such materials as can be secured.

382. It is a good plan to build a corral fence around and inclosing the picket lines of new organizations. This is also true of organizations having a new lot of animals or camped close to other mounted commands, thus avoiding the often serious annoyance of lost animals. Such a corral also assists in the prevention of the spread of contagious diseases among the animals.

SECTION VII.—FIELD PICKET LINES.

383. Field picket lines should be carried by all organizations having animal transportation while in the field, and are used whenever the troops go into temporary camps.

This field picket line may be stretched between the wagons or used as a ground line. If used as a ground line, it should consist of 1-inch manila rope 45 feet long, into iron rings at each end, 20 feet of ½-inch rope for a reeve rope, two end pins, and a center pin.

The line should be kept taut and the pins driven flush with the ground when possible.

384. The animals are tied on the line so those in each section stand together. Precautions should be taken to tie animals of mean disposition where they can not injure their neighbors by kicking or biting. In cold, wet, or windy weather animals like to stand with their tails to the wind, and effort should be made to place the lines so that this will be possible. In hot weather endeavor should be made to get as much shade as possible; if the camp be permanent, shade for the lines must be extemporized. Continued standing in the hot sun will seriously debilitate the animals.

385. The sanitation of the picket lines in a permanent or semipermanent camp demands constant attention. Ditches should be cut to allow them to drain easily, and manure and foul litter must be removed daily. During the fly season the lines should be sprinkled once a week with crude oil or other inflammable material and burned off.

If the ground becomes sodden with rain or otherwise broken up, the position of the lines should be changed.

If there be an extreme range of daily temperature, horse covers are of value. The use of covers, however, is liable to abuse. A horse can stand great cold when properly acclimated. A cover saves feed, but its use makes the animal dependent upon it and renders him much more liable to colds and chills than if his coat had been entirely relied upon to afford him proper protection. Cold rains will tell on the condition of uncovered horses unless they get extra food.

SECTION VIII.—GROOMING.

386. Drill or work requiring the use of the animals of the command is followed immediately by *stables*; the horses and mules are then thoroughly groomed and the harness and equipment cared for and put away in good order. The lieutenant in charge of the train is present and in immediate supervision of this work. He is assisted by the stable sergeant.

On Sundays or holidays the animals are thoroughly groomed once during the day. This is usually done at morning stables. The lieutenant in charge of the train or some other officer of the company is present at this time.

On work days morning stables are held for the animals before they go out. At that time each section leader superintends the removal of manure and foul litter from his stalls or picket line, seeing that it is placed in piles convenient for carting away; he causes the men of his section, after cleaning their stalls, to look over and carefully examine the animals to see that they are fit for work (368), and he causes each to be brushed clean of dirt or manure. The lieutenant in charge inspects the general condition of the animals and stables at this time.

On returning from a drill or exercise and after a march the animals are unbridled, their collars and traces removed, and the girths loosened. The men then put on stable clothes, relieve themselves, and prepare for the work of caring for the equipment and grooming. After the bits and collars are cleaned, the remainder of the harness is removed from the horses and disposed of deliberately, the necessary cleaning being done at the same time and in the most convenient manner. After the allotted time has been given for the care and disposal of the harness and equipment, the animals are groomed and cared for.

Grooming is habitually done at the picket line.

Mounted men groom their own horses. The train animals are groomed by their riders or drivers or detailed privates.

The animals of each section are groomed by their drivers or riders or detailed men. An absent section leader is replaced by a gun-squad leader.

The horses of officers are groomed by specially detailed men.

The men are marched to the picket line, take the position of stand to heel at the direction of the senior sergeant present, and then begin work as soon as the senior sergeant commands: *Commence grooming.*

387. Grooming is essential to the general health and condition of the domesticated animal. Horses and mules improperly groomed, with ragged manes, unkempt pasterns, feet improperly looked after, forms an indication of an inefficient organization. Clean animals, properly harnessed and smartly turned out, add to the esprit of an organization and give a fair indication of its discipline and efficiency.

The principal use of the currycomb is to clean the brush. For this purpose a piece of hardwood with channels along its surface answers equally well.

The currycomb should never be used on the legs from the knees and hocks downward nor about the head, and when occasionally required to loosen dried mud or matted hair on the fleshy parts of the body it must be applied gently.

To groom the horse proceed as follows:

First clean the front legs, then the hind legs. They will thus have time to dry while the rest of the grooming is being done. Next, on the near side, with the currycomb in the right hand, fingers over back of comb, and the brush in the left hand, begin brushing at the upper part of the neck, the mane being thrown to the other side out of the way; thence proceed to the chest, shoulders, back, belly, flanks, loins, and rump. In using the brush the man should stand well away from the horse, keep his arm stiff, and throw the weight of the body against the brush. The principal work of the brush should follow the direction of the hair, but in places difficult to clean it may be necessary to brush against it, finishing by leaving the hair smooth. After every few strokes clean the brush from dust with the currycomb.

Having finished the near side, take the brush in the right hand, the currycomb in the left, and groom the offside in the same order.

Having done with the brush, rub or dust off the horse with the grooming cloth, wipe about the face, eyes, and nostrils, arrange the mane and tail, and clean the dock. Finally go over the legs once more and clean out the hoofs. In cleaning the mane and the tail begin brushing at the end of the hair and gradually work up to the roots, separating the locks with the fingers so as to get out all scurf and dirt. Tails require frequent washing with warm water and soap. The skin under the flank and between the hind quarters must be soft, clean, and free from dust. Currycombs, cords, or common combs must never be applied to the mane or tail; the brush, fingers, and cloth are freely used on both.

The wisp is used when the horse comes in wet, and also for stimulating the coat. It is made by twisting or plaiting straw

into a rope. The ends are then bent together, cut off square and rubbed on a board until they form a soft, even straw brush. The wisp should be worked forward and backward well into the coat, so that full advantage may be obtained from the friction. After finishing with the wisp the coat should be laid flat.

Hand rubbing is beneficial. When an animal has had very hard, exhausting work his legs should be hand rubbed and afterwards bandaged, taking care that the bandages are not tight. An exhausted animal should also be given stimulants and warm gruel.

The value of grooming is dependent upon the force with which the brush is used and the thoroughness of the other work.

Officers and noncommissioned officers should, by continuous personal supervision, see that the grooming is properly done.

No horse or mule should be considered in order until he is thoroughly clean, his mane and tail brushed out and laid flat, his eyes and nostrils wiped or washed, and hoofs put in order.

The pasterns and that part of the mane where the crown-piece of the bridle rests should be neatly trimmed and the mane and tail plucked.

At each stable the feet and shoes are carefully examined. Animals requiring shoeing are reported to the chief of section, who notifies the stable sergeant.

Horses' sheaths are kept clean by washing, when necessary, with warm water and castile soap.

Teasing in grooming should not be permitted. It is a bad practice to attempt to make an animal submit to rough or harsh grooming. To do so means that he will be provoked into kicking, striking, or biting, and perhaps confirmed in these bad habits. If he objects to the use of the brush or currycomb, the hand or cloth should be gently used instead. Careful work will usually win the animal into submitting to the proper use of the grooming tools.

The object of grooming is not merely to clean the coat. The skin must be rubbed and massaged to keep the animal healthy and in condition. An abundance of friction applied to the skin when the horse returns from his work is of special value in keeping him healthy and fit.

Quick grooming is to be encouraged. Under ordinary conditions a horse or mule should be thoroughly groomed in 20 minutes. On the other hand, at least that much time should be devoted to him. Each section leader, after the necessary time has been devoted to grooming and after he has made a thorough inspection of every animal in his section and finds them all satisfactorily groomed, reports to the officer in charge: *First (such) section in order.* The officer, after making an inspection, may, if the grooming is satisfactory, permit the section leader to dismiss the men.

388. To confirm recruits in a thorough and systematic method of grooming and to impress upon them the amount of time to be ordinarily devoted to the different parts of the animal they are required to groom by detail during their instruction.

To groom by detail the instructor causes the men to stand to heel and commands: 1. *By detail*, 2. COMMENCE GROOMING. Clean and brush front legs from the knees down, rubbing under the fetlocks and around the coronets with the brush and hand; time, 2 minutes. 3. CHANGE. Same as at second command, the hind legs from the hocks down; time, 2 minutes. 4. CHANGE. On the near side, with currycomb and brush, groom neck, shoulders, arm, elbow, back, side, flank, loins, croup, and the hind leg to the hock; time, 4 minutes. 5. CHANGE. First on the near side, after finishing upon the offside, groom chest between the forelegs, the belly, and between the hind legs; time, 3 minutes. 6. CHANGE. Same as 4, on the offside; time, 4 minutes. 7. CHANGE. Brush head, ears, and throat; with the hand rub the throat and between the forks of the lower jaw; time, 1 minute. 8. CHANGE. Brush and lay forelock and mane; time, 2 minutes. 9. CHANGE. Brush out the tail; time, 2 minutes. 10. CHANGE. With the grooming cloth, or with a damp cloth or sponge, if the parts are foul, wipe out the eyes and nostrils; wipe the muzzle, dock, sheath, and up between the hind legs; time, 2 minutes. 11. CHANGE. Clean out the feet; time, 2 minutes. 12. CHANGE. Complete any unfinished work. 13. CEASE GROOMING. 14. STAND TO HEEL.

Total time required at least 24 minutes.

To facilitate supervision the men must be required to change promptly at the command.

389. To judge the cleanliness of an animal, the hand may be passed the reverse way of the hair to get a view of the skin. When the points of the fingers are run firmly against the set of the coat lines of gray are left on the coat of a dirty skin and the points of the fingers are covered with scurf. Between the branches of the under jaw, under the crownpiece of the halter, at the bends of the knees and hocks, under the belly and between the forelegs and thighs are the places usually neglected when the work is not thorough and which should be looked at in the inspection.

390. Animals should never be hurried in turning around in their stalls. Should the stalls or driveways be covered with ice or be otherwise slippery, sand or litter should be sprinkled on them.

391. Horses are particularly terrified by fire. Should a fire occur in the stables they must be led, backed, or ridden out of the stable. If they are unwilling, a coat or gunny sack should be thrown over their eyes. Care should be taken that they do not break back into the stables.

392. The lieutenant in charge should make it a point to visit the stables occasionally at odd times of the day. The habits and peculiarities of animals may be much better studied when the men are away than when grooming is going on.

SECTION IX.—FEEDING.

393. Three principles should be adhered to in feeding:

1. Water a thirsty animal before feeding him.
2. Feed in small quantities and often.
3. Do not work an animal hard immediately after a full feed.

All animals should be fed three times a day—at reveille, in the middle of the day, and at night. This rule must be rigidly enforced on the march, the noon grain being carried on the animal or in the wagon.

The forage ration for a horse is 14 pounds of hay and 12 pounds of oats, corn, or barley. For a mule it is 14 pounds of hay and 9 pounds of oats, corn, or barley. To each animal 3 pounds of bran may be issued in lieu of that quantity of grain. A desirable distribution of the grain ration is, for a horse which

is getting 12 pounds per day, 3 pounds in the morning, 3 or 4 pounds at noon, and the rest at night. Hay, as a rule, is not fed in the morning; about one-third of the ration should be fed at noon, except on the march, and the remainder at night.

394. A bran mash acts as a mild laxative and should be fed once or twice a week to stabled animals. A little dry bran mixed with the oats is of value in compelling more thorough mastication and prevents greedy animals from bolting their grain. In spring or early summer the animals should be grazed daily when practicable. A lump of salt should be kept in each manger.

Before feeding hay it should be thoroughly shaken out with a fork so as to get rid of dust and seed; it is also advisable to moisten the hay before feeding it. The grain, if possible, should be run over wire screens or allowed to fall through the air to remove dust.

It is advisable to feed at least a portion of the allowance of hay before feeding the grain.

Grain should never be fed or placed in the mangers until it is certain that the animals are thoroughly cool.

Never feed grain to a horse when heated or fatigued. Grain is a highly concentrated food that requires high digestive power. Abnormal temperature impairs the power of the digestive organs. If the animal has been worked to the point of fatigue, all bodily functions are for a time injuriously affected. For that reason he must be rested and his normal digestive power restored before concentrated food of any kind is given to him. On the other hand, hay, being a bulky food, will not hurt a horse, however heated or fatigued he may be.

In the morning feed is usually placed in the manger at or before reveille. The noon feed of hay is usually placed in the manger while the organization is at drill, but the grain is not fed until the animals are thoroughly cool. The evening feed is placed in the mangers after the stables have been thoroughly policed for the night.

395. Immediately after a full feed the stomach and bowels are distended. If hard work is given at once, they press against the lungs and impede their power of expansion, thus leading to blowing and distress. Fast work should therefore be avoided after a full feed. Moreover, though such work rarely results

in colic, it interferes with digestion to such an extent that looseness of the bowels occurs and the food passes through undigested and is wasted. Food remains in the stomach about one and one-half hours. Fast or heavy work should therefore be deferred from one and one-half to two hours after a full feed.

396. All animals do not require the same amount of forage; the amount given each must be based, therefore, upon his individual requirements, which should be closely watched by the stable sergeant. When a horse or mule leaves some of his grain his ration should be reduced that amount. The amount to be fed each animal each meal should be chalked up on a small black-board placed so as to be easily seen by the men distributing the grain. A convenient arrangement is a board about 12 inches high by 4 inches wide divided by two horizontal lines into three 4-inch squares. In the uppermost square should be marked in pounds the morning feed of grain, in the center square the noon feed, and in the bottom square the night feed. When an animal is sick or injured his grain ration should be reduced, depending upon the animal.

When forage can not be obtained grazing should be required at every spare moment, especially early in the morning when the dew is on the grass, but not if it is covered with frost.

All forage should be inspected by the lieutenant in charge to see that it is up to weight and contract specifications. A forage book showing daily entries of all forage drawn, fed, and remaining on hand, together with the number of the public and private animals fed, will be kept by the stable sergeant and checked daily by the lieutenant in charge. All officers should be familiar with the characteristics of good forage and the manner in which it is commercially graded for contract specifications. To obtain this knowledge officers should be encouraged to visit large commercial stables.

Barley possesses a husk so tough and indigestible that it should always be crushed before being fed, else a very great part of its nutrient value is lost.

Sudden changes in food are to be avoided. The digestive organs are frequently unable to accommodate themselves to a sudden change and scouring, constipation, or colic may result. If sudden changes become necessary the ration of the new feed

should be greatly reduced and then increased gradually to the full requirements.

Good oats weight about 40 pounds to the bushel, barley about 48 pounds, corn about 56 pounds. Pressed hay weighs about 11 pounds per cubic foot.

The standard bushel in the United States contains 2,150.4 cubic inches. A cubic yard contains 21.69 bushels. A box 16 by 16.8 by 8 inches holds 1 bushel; a box 12 by 11.2 by 8 inches holds half a bushel; a box 8 by 8 by 8.4 inches holds 1 peck; a box 8 by 8 by 4.2 inches holds one-half peck or 4 quarts.

SECTION X.—WATERING.

397. Give the animal an opportunity to drink before leaving the picket line or stable and before putting the bit in his mouth. Animals must be watered quietly and without confusion; the manner in which this duty is performed is an indication of the discipline of a command.

They are to be led to and from water at a walk. At the drinking place none should be hurried or have his head jerked up from the water. All animals should be allowed ample time to drink their fill and not be led away the first time they raise their heads from the water. This must be carefully explained to the untrained man who thinks, because an animal puts up his head to get his wind after his first fill, that he is finished.

In the field or on the march the watering is from the most convenient running water; in garrison it is usually from troughs, which should be cleaned each day. In warm weather water drawn from a cold well or spring should stand long enough for the chill to pass off.

Watering is under the immediate direction of the stable sergeant in garrison and the section leader in the field, but if they are liable to meet those of other commands at the watering place a commissioned officer should supervise this duty.

All animals should be watered before feeding or not until two hours after feeding. Ordinarily they should be watered twice a day; in hot weather three times a day. In very cold weather once a day, about noon, is sufficient. A horse will rarely drink freely very early in the morning.

If a mounted command is to march a long distance without water, so that it will be necessary to camp en route, the animals are fed and denied water until just before starting, when they are permitted to drink freely. The command marches in the afternoon and does not encamp until it has accomplished at least half of the distance and moves early next morning to reach water.

Watering the horses on the march depends in a great measure upon the facilities to be had. If nothing is known as to the country over which the day's march is to be made, water call should be sounded shortly before leaving the camp and every horse given an opportunity to drink. As many animals, however, will not drink at an early hour, or until after exercising, the horses should be watered at the first opportunity. On severe marches frequent watering is of great benefit.

Except as directed in paragraph 369, never water a horse when heated unless the exercise or march is to be resumed immediately; if the exercise or march is to be resumed at once, water will be of the greatest benefit to the horse, no matter how heated he may be, but a horse should not be called upon to do fast work for at least half an hour after a big drink.

A horse requires from 5 to 15 gallons of water daily, depending upon the temperature and upon the work he is doing.

SECTION XI.—SHOEING.

398. Shoeing is done according to the principles outlined in the authorized manual.

All officers must understand the principles of proper shoeing and must supervise the work of the horseshoers, being especially careful to see that the knife is not used improperly.

All mounted men should know how to put on a shoe in an emergency. The following paragraphs are therefore here incorporated:

The foot should be prepared so that it will approximate as nearly as possible to a state of nature, and only such trimming is allowed as is absolutely necessary for the purpose of fitting and securing the shoe.

The knife must never be used on the bars or on the frog. The bars strengthen the hoof and assist in its expansion. Cutting,

therefore, weakens them and prevents them from performing their function. The practice of using the knife to trim the bars or to cut a notch at the junction of the frog and bar at the heel (called "opening the heel" in civilian shops) always tends to produce contracted feet.

Never use the knife on flat feet or on the hoof of an animal that has been running barefoot.

Ragged parts of the frog may be cut away by careful use of the nippers.

With a flat foot it is frequently necessary to remove a part of the outer edge of the wall in order that the nails may be driven in the white line, where they belong. This is the *only* case where it is permitted to rasp the outside wall. The outer coating of the wall and the layers of dead horn on the sole and frog serve to retain the moisture in the hoof.

The hot shoe must never be applied to the foot under any circumstances.

When shoes are left on the feet too long, corns and other ailments are the result. Ordinarily a shoe should be replaced at least once a month. The lightest shoe that will last for this time is the best shoe. It should carefully follow the form of the foot, or, if the foot is broken, the shoe follows the original form of the foot. Its length is regulated by the bulb of the frog.

The ground surface of the shoe should be level and smooth, except for use in snow, when the ground surface should be concaved to prevent balling. That portion of the upper surface which presses against the bearing surface of the foot must be level, smooth, and accurately shaped to support it, and when the upper shoe surface is wider than the bearing surface the inner edge must be concaved to avoid excessive sole pressure. This is one of the most important requisites of correct horse-shoeing. Concussion of the sole against the inner edge of the upper shoe surface invariably produces soreness.

399. One side of the shank of a horseshoe nail is flat. The other side is concave and also has a bevel near the point. This bevel, as it enters into the horn, forces the point of the nail in the direction of the other, the flat, side. Therefore in driving a nail always hold it with the flat side toward the outside edge of the shoe.

Nails should come out at a height of not more than 1 inch from the bottom of the hoof.

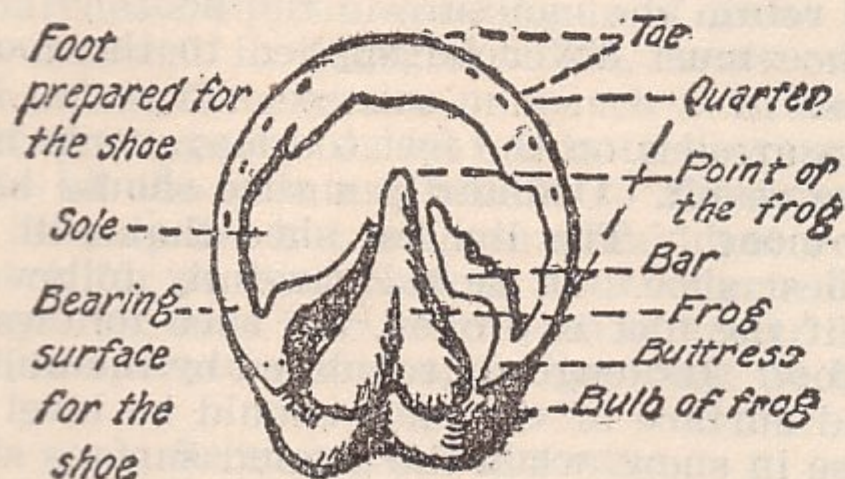
400. In garrison, at the discretion of the colonel or of the commanding officer, the animals may be left unshod, but shoes will be kept ready for each animal.

INSPECTION OF SHOEING.

401. The following examination should be made while the animal is standing on a level floor with the foot on the ground:

1. Are the axes correct when viewed from the front and from the side?

2. Does the shoe follow the outer line of the wall to the last nail hole and from there extend outward, allowing about one-



eighth of an inch at the heel for expansion? Has the rule against rasping the hoof to fit the shoe been violated?

3. Is the toe clip in the center properly made and properly seated?

4. Are the nails driven at the proper height and proper distance apart? Have any old stubs been left in the wall?

5. Are the clinches well turned and set in, of the proper size, and have they been smoothed off but not rasped sufficiently to weaken them?

The foot should be raised and the examination continued:

1. Is the shoe of the proper size and weight; the last nail hole back of the bend of the quarter?

2. Has enough horn been removed? Has too much been removed? Is the foot level?

3. Does the shoe rest evenly on the wall, covering the buttresses, and showing no air space at any point?

4. Is the shoe properly concaved so as to avoid pressure on the sole?

5. Has the knife been used on the bars, sole, or frog?

6. Are the nails well seated and of the proper size?

7. Are the heels of the shoe correct in width and thickness and are they properly rounded, without sharp edges or points? Is their length even with the bulb of the frog?

SECTION XII.—SICK ANIMALS.

402. The animals on sick report are in charge of the stable sergeant, who reports daily to the captain for instructions as to their treatment.

The sick animals are inspected daily. The names of the animals on sick report, and the treatment they receive, are recorded daily in the sick book.

In treating sick animals, it is to be observed that very little medicine is ordinarily required, and that unnecessary doses do a great deal of harm.

If an animal sustains an injury, neglects his feed, refuses to drink, or gives any evidence of sickness, it will be at once reported.

No animal on sick report will be taken from the stable or picket line for exercise or work without permission from proper authority.

403. If there be at any time a suspicious discharge from one or both nostrils of an animal it must be immediately reported.

To prevent contagion to man or beast, an animal that shows any decided symptom of glanders is to be isolated at once and confined or tied up in some locality where no other animal can approach him.

404. A glandered animal should be killed as soon as possible. The stall in which he stood is torn down and all the woodwork burned and the ironwork disinfected, or otherwise it is closed, and must remain empty until the rack, manger, and every part of the iron and woodwork, as also the vessels used in watering and feeding and his saddle and bit, have been three or four times thoroughly washed with a 5 per cent solution of

carbolic acid or a 1 to 1,000 solution of corrosive sublimate; all parts to which the latter has been applied should be thoroughly scrubbed with hot water to remove all traces of the poisonous salt. The application of a lime wash to all the stalls, after complete disinfection, will be desirable. Small articles, such as bits, etc., can be disinfected by keeping them immersed for a half hour in boiling water. All articles of little value that have been used with a glandered horse, such as halters, bridles, horse cloths, saddle cloths, blankets, nose bags, currycombs, brushes, etc., should be destroyed.

Stables occupied by infected or suspected horses should be disinfected daily by washing exposed surfaces with a 5 per cent solution of carbolic acid, and nose bags, halters, buckets used for drinking water, etc., should be carefully washed with the same solution or with boiling water.

405. Drugs and dressings sufficient, under ordinary conditions for field service, for 100 animals for one month:

Boracic acid: 4 ounces, saturated solution, for disinfection of wounds of eye and vicinity.

Carbolic acid: 16 ounces. A solution of 1 ounce to 1 quart of water to disinfect wounds of body.

Alcohol: 1 quart; 2 ounces in pint of water as a quick stimulant.

Aloes: 20 ounces; 1 ounce as a cathartic; $\frac{1}{2}$ ounce to pint of water stimulates wounds.

Alum: 4 ounces; $\frac{1}{2}$ ounce to pint of water acts as a nice stimulant to wounds.

Ammonia, aromatic spirits of: 16 ounces; 2 ounces in pint of water a quick stimulant.

Ammonia, solution of: 8 ounces; used to make liniments.

Cannabis Indica: 16 ounces; $\frac{1}{2}$ ounce to the dose in cases of colic to relieve pain.

Charcoal: 8 ounces; used to dust on exposed wounds.

Cosmoline: 2 pounds; used to make ointments.

Creolin: 1 pound; 1 ounce to quart of water as a disinfectant for wounds.

Ether, nitrous: 16 ounces; 2 ounces in pint of water as a stimulant.

Iodine crystals: 2 ounces, with which to make a saturated solution or tincture for application to sprains.

Copper sulphate: 1 ounce, to cut down granulations (proud flesh).

Mercury, bichloride tablets: 1 ounce; 1 tablet in pint of water, as a disinfectant for wounds.

Olive oil: 1 pint, with which to make liniments.

Turpentine: 1 pint, to make liniments.

Tar, oil of: 4 ounces, with which to make ointments.

DRESSINGS.

Absorbent cotton: $\frac{1}{2}$ pound, for eye pads.

Antiseptic gauze: 1 package, for dressing of wounds.

Oakum: 3 pounds, to be used in dressing wounds.

Red flannel bandages: 1 dozen.

White cotton bandages: 2 dozen.

Silk thread: $\frac{1}{4}$ ounce.

Soap, castile: 1 pound.

Sponges: 4 small.

Adhesive plaster: 1 roll.

INSTRUMENTS.

1 farrier's case.

1 thermometer.

1 twitch.

1 drenching bottle.

4 small bottles and corks.

1 tin basin.

2 quart bottles and corks.

30 sheets tissue paper.

A liniment: Olive oil, 3 ounces; turpentine, 2 ounces; ammonia (solution of), 2 ounces. Mix well. Apply with slight friction.

A stimulant: Aromatic spirits ammonia, 2 ounces; alcohol, 1 ounce; water, 16 ounces. Mix. Give as a draught.

A good dusting powder for wounds: Air-slaked lime, 16 ounces; powdered charcoal, 2 ounces. Mix. Dust on open wounds.

An ointment: Oil of tar, 1 ounce; creolin, $\frac{1}{2}$ ounce; cosmoline, 6 ounces. Mix.

PART V.

THE SOLDIER.

(Mounted.)

SECTION I.—STANDARD REQUIRED.

406. The qualifications of a good horseman, in the military service, are as follows:—

1. He should have a strong seat quite independent of the reins.
2. He should be able to correctly apply the aids by which a horse is controlled.
3. He should be capable of covering long distances on horseback with the least possible fatigue to himself and to his horse.
4. Under proper directions he should be able to train an untrained horse and to improve a badly trained one.
5. He should have a practical knowledge of the care of horses, both in garrison and in the field; he should understand how to detect and treat the minor ailments to which they are liable; and he should be a good groom.
6. His attention to the care and adjustment of his equipment should be unremitting.

SECTION II.—PRELIMINARY INSTRUCTION.

GENERAL PROVISIONS.

407. For the preliminary exercises the horses are saddled and equipped with the snaffle bit only, saddles stripped. Spurs are not worn. These exercises are conducted at first in a riding hall or on an inclosed course out of doors.

The instructor will confine himself to the commands and means prescribed as soon as the instruction has advanced sufficiently to permit it.

HORSE EQUIPMENT.

408. The instructor indicates the different articles of horse equipment, instructs the men in the nomenclature of the various parts, and explains the use of these parts.

TO FOLD THE SADDLE BLANKET.

409. The blanket, after being well shaken, will be folded into six thicknesses, as follows: Hold it well up by two adjacent corners, the longer edges vertical; double it lengthwise, so the fold will come between the "U" and "S," the folded corner in the left hand; take the folded corner between the thumb and forefinger of the right hand, thumb pointing to the left; slip the left hand down the folded edge two-thirds of its length and seize it with the thumb and second finger; raise the hands to the height of the shoulders, the blanket extended between them; bring the hands together, the double fold falling outward; pass the folded corner from the right hand into the left hand, between the thumb and forefinger, slip the second finger of the right hand between the folds, seize the double folded corner; turn the left disengaged corner in and seize it with the thumb and forefinger of the right hand, the second finger of the right hand stretching and evening the folds; after evening the folds, grasp the corners and shake the blanket well in order to smooth the folds; raise the blanket and hold the upper edge between the chin and breast; slip the hands down halfway, the first two fingers outside, the other fingers and thumb of each hand inside; seize the blanket with the thumbs and first two fingers, let the part under the chin fall forward; hold the blanket up, arms extended, even the lower edges; retake the middle points between the thumb and forefinger and flit the outside part over the right arm.

The blanket is thus held before placing it on the horse.

TO PUT ON THE BLANKET AND SURCINGLE.

410. The instructor commands: BLANKET.

Approach the horse on the left side, with the blanket folded and held as just described; place it well forward on his back by tossing the part of the blanket over the right arm to the right side of the horse, still keeping hold of the middle points; slide the blanket once or twice from front to rear to smooth hair, being careful to raise the blanket in bringing it forward; place the blanket with the forefinger of the left hand on the withers and the forefinger of the right hand on the backbone, the blanket smooth; it should then be well forward with the edges on the left side; remove the locks of mane that may be under it; pass the buckle end of the surcingle over the middle of the blanket and buckle it on the near side a little below the edge of the blanket.

411. The saddle now issued is the McClellan saddle, as shown on page 161.

412. The bridle now issued is the double bridle, model 1912, as shown on page 165.

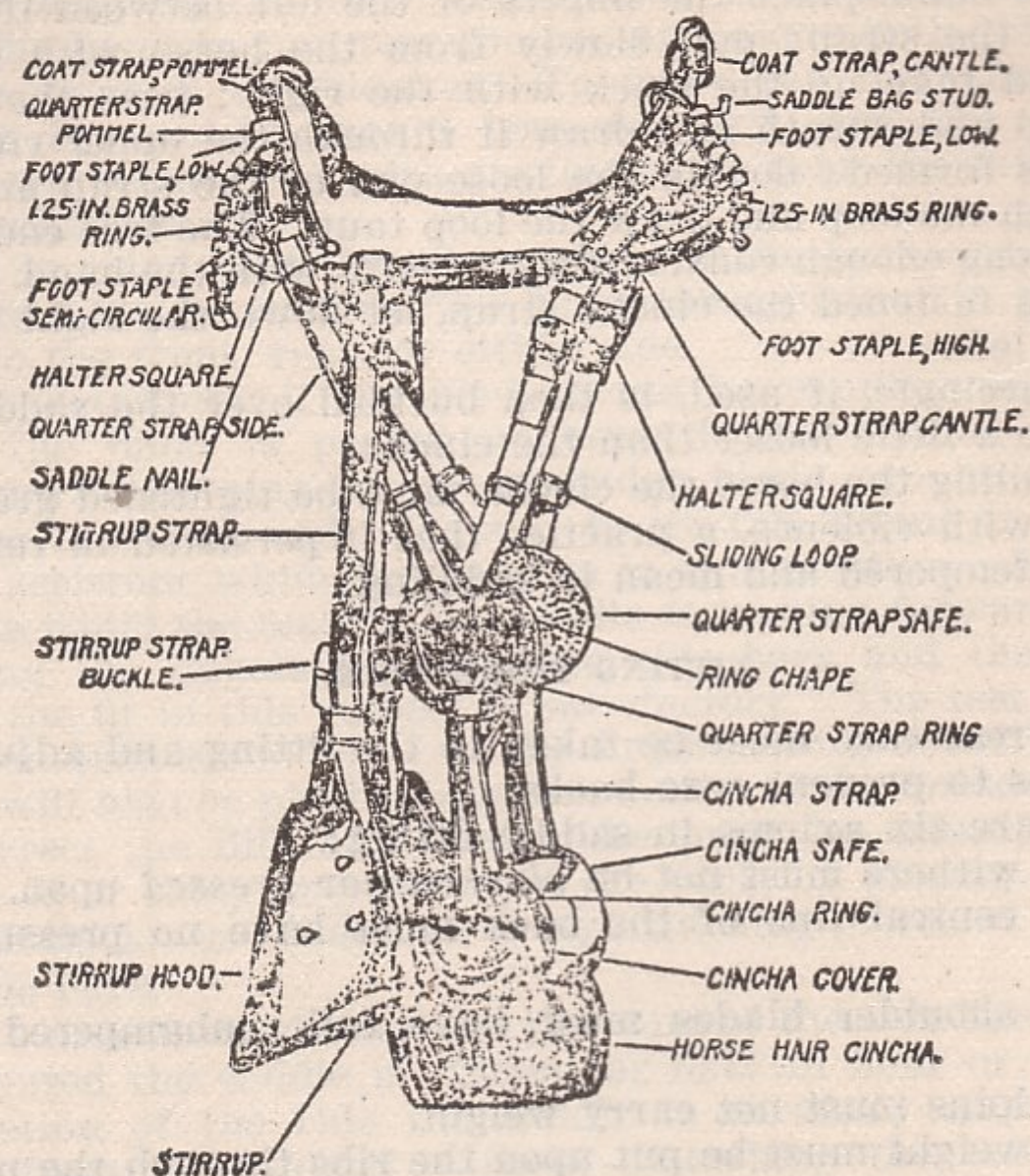
TO SADDLE.

413. For instruction, the saddle may be placed 4 yards in rear or in front of the horse. The stirrups are crossed over the seat, the right stirrup uppermost; the cincha and cincha strap are crossed above the stirrups, the strap uppermost.

The blanket, without the surcingle, having been placed as previously explained, the instructor commands: SADDLE.

Seize the pommel of the saddle with the left hand and the cantle with the right; approach the horse on the left side from the direction of the croup and place the center of the saddle on the middle of the horse's back, the front end of the side bars about three fingers' width behind the points of the shoulder blades; let down the cincha strap and cincha; pass to the right side, adjust the cincha and straps and see that the blanket is smooth; return to the left side, run the left hand, back up, down the withers so as to raise the blanket slightly under the pommel arch, in order that the withers may not be pinched or pressed upon; take the cincha strap in the right hand, reach

under the horse and seize the cincha ring with the left hand, pass the end of the strap between the ring and safe and through the ring, then up through the upper ring from the outside; if necessary, make another fold in the same manner.



McClellan saddle.

The strap is fastened as follows: Pass the end through the upper ring to the front and seize it with the left hand; place the fingers of the right hand between the outside folds of the strap; pull slowly from the horse with the right hand and take up the slack with the left; cross the strap over the folds, pass the end of it, with the right hand, underneath and through the

upper ring back to the folds; then down and under the loop that crosses the fold and draw it tightly; secure the end of the strap.

Another method of fastening the cincha strap is as follows: Pass the end through the upper ring to the rear; seize it with the right hand, place the fingers of the left between the outer folds of the strap; pull slowly from the horse with the left hand and take up the slack with the right; pass the end of the strap underneath and draw it through the upper ring until a loop is formed; double the loose end of the strap and push it through the loop and draw the loop taut. The free end should then be long enough conveniently to seize with the hand.

Having fastened the cincha strap, let down the right stirrup, then the left.

The surcingle, if used, is then buckled over the saddle, and should be a little looser than the cincha.

In saddling the horse the cincha must be tightened gradually, and not with violence, a practice that if persisted in renders a horse ill tempered and mean in saddling.

FITTING THE SADDLE.

414. Great care must be taken in the fitting and adjustment of saddles to prevent sore backs.

There are six axioms in saddle fitting:

1. The withers must not be *pinched* nor *pressed* upon.
2. The central line of the back must have no pressure put upon it.
3. The shoulder blades must have full, unhampered movement.
4. The loins must not carry weight.
5. The weight must be put upon the ribs through the medium of the muscles covering them.
6. The weight must be *evenly distributed* over a surface which extends from the play of the shoulders to the last true rib.

To fit the saddle: 1. The saddle, without blanket, is placed in its proper position on the back. It should be noted whether the upper or lower edges or the front or rear of the side bars gouge into the back at any place. If this occurs, or if the saddle when lifted from the back a distance corresponding to the thick-

ness of the blanket otherwise fails perceptibly to conform to the outlines of the back, the test and remedy described below (5) should be made and applied.

2. The existence of wither pressure is determined by *blanketing* and saddling the horse and placing an assistant in the saddle. The hand is run over the top and along both sides of the withers beneath the blanket. To make the test effective the man in the saddle should lean forward, and the examiner should not be satisfied with anything less than the introduction of his entire hand.

3. It is noted that the central line of the back and also that the loins bear no weight even when the assistant in the saddle leans to the front, rear, or either side.

4. To determine if the blade bones have unhampered movement, the hand is passed underneath the blanket from the front until the play of the shoulder blade can be felt. The fore leg is raised and advanced to its full extent to the front by an assistant while the hand is in this position. If this can be done while the man in the saddle is leaning forward without pinching the fingers between the side bars and the shoulder blade, the fit in this respect is satisfactory. The test should be made on both shoulders. If the fingers are pinched, the blade bones will also be pinched and the action of the horse restricted. To correct the difficulty the saddle must be raised, assuming that it is at the proper place on the back, by placing under it a greater thickness of blanket or by attaching pieces of felt under the side bars.

5. To ascertain whether the pressure of the side bars is evenly distributed the saddle is ridden for half an hour or more. On completion of the ride the saddle is carefully ungirthed and lifted from the blanket without disturbing the latter in any way. The blanket will be found to bear the imprint of the side bars, and an examination of this depression will show at a glance whether the bars press evenly from top to bottom and from front to rear. This examination must be made quickly, as the elasticity of the blanket soon causes it to lose the impression of the side bars. Any irregularity in the fit of the side bars may be remedied by the introduction of pieces of felt to fill up the spaces between the side bars and the blanket. With very little practice these pieces of felt may be cut to the

required shape and thickness with a very sharp knife. Some edges will need to be as thin as a knife edge; other parts may require the addition of more than one thickness. After determining where these pieces of felt are to rest, they are attached to the side bars with glue and bound in place by sheepskin tacked to the side bars. The most radical alterations in the fit of the side bars can be effected in this manner. The method is simple and quick and can easily be performed by the average saddler.

6. The cincha should be sufficiently tight to keep the saddle in its place and no tighter. Generally speaking, correct cinching has been obtained when the flat of the hand is easily admitted under the quarter ring safe. With most horses, after exercising for a while the cincha will be found too loose and should be taken up.

A tight cincha restricts the animal's breathing, and also brings too much pressure upon and strangles the tissues. Especially is this apt to be the case under the quarter and cincha ring safes, when strangulation soon causes lumps, puffs, and sores.

7. Care is taken that the quarter straps are so adjusted and the cincha so selected that the cincha ring safe will be a sufficient distance from the quarter ring safe to avoid pinching and galling the skin between them.

TO REMOVE THE SADDLE.

415. The instructor commands: UNSADDLE.

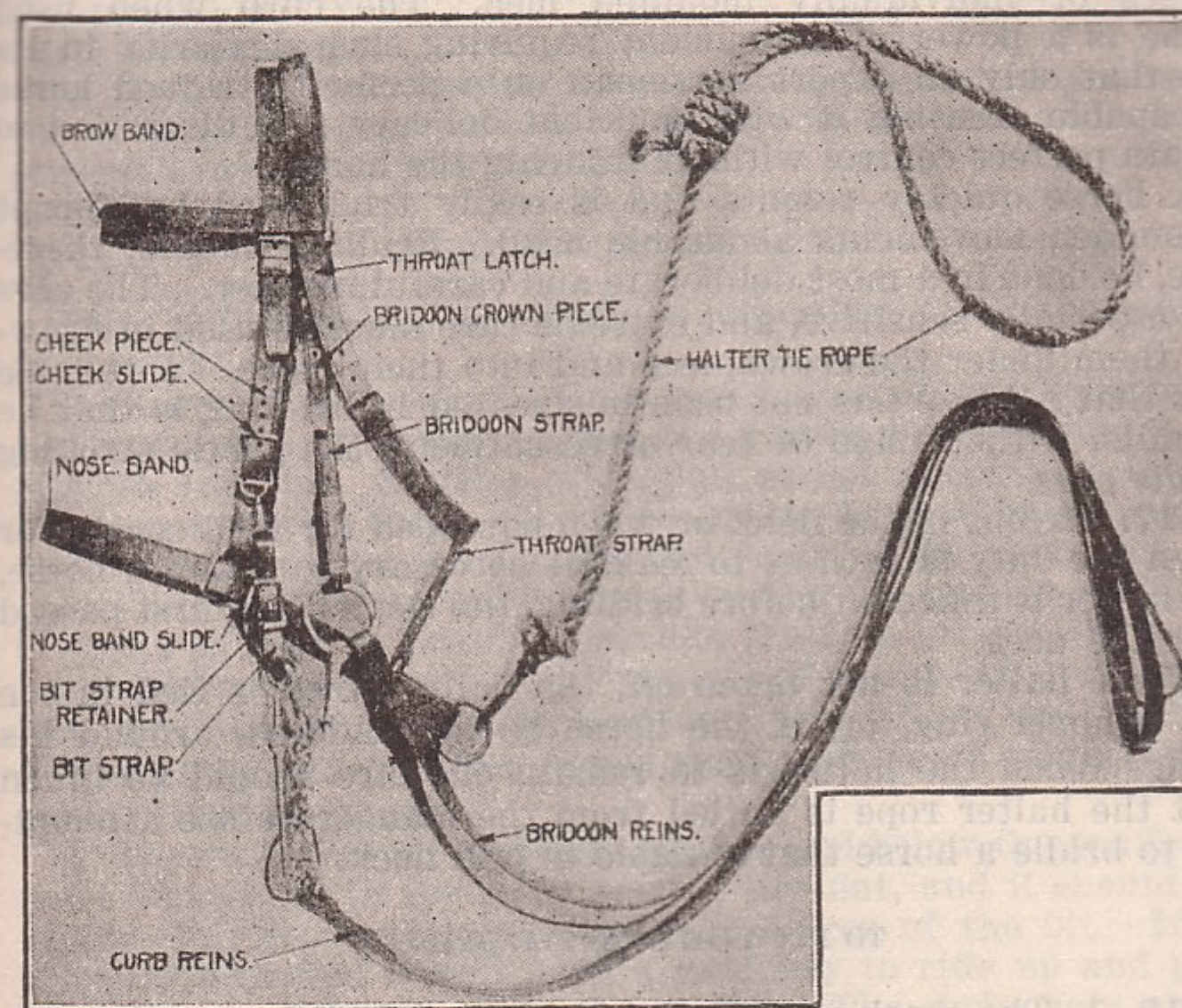
Stand on the left side of the horse; unbuckle and remove the surcingle, if in use; cross the left stirrup over the saddle; loosen the cincha strap and let down the cincha; pass to the right side, cross the right stirrup, then the cincha over the saddle; pass to the left side, cross the cincha strap over the saddle; grasp the pommel with the left hand, the cantel with the right, and remove the saddle over the croup and place it in front or rear of the horse as may be directed, pommel to the front; grasp the blanket at the withers with the left hand and at the loin with the right, remove it in the direction of the croup, the edges falling together, wet side in, and place it across the saddle, folded edge on the pommel, marked side of the blanket upper-

most; if in the stable, place the saddle on its peg when taken off the horse.

TO PUT ON THE DOUBLE BRIDLE.

416. The instructor commands: BRIDLE.

Take the double reins in the right hand, the crownpiece in the left; approach the horse on the left side; slip the reins over his



Halter bridle, model of 1912.

head, letting them rest on his neck; take the crownpiece in the right hand and the lower left branch of the curb bit in the left, the forefinger against the mouthpiece; bring the crownpiece in front of and slightly below its proper position; insert the left thumb into the left side of the mouth above the tush; press

upon the lower jaw, insert both bits by raising the crownpiece, then with the left hand draw the ears gently under the crownpiece, beginning with the left ear; arrange the forelock, secure the throat latch and the curb chain, take care to adjust them properly.

The bridle with snaffle bit only is put on in a similar manner. A bridle with curb bit only is not permitted to be used on the horses of individually mounted men. The curb when used alone is a powerful instrument requiring such dexterity in its use that only an expert horseman on a perfectly trained horse is capable of using it with sufficient delicacy and discretion to obtain perfect control without injuring the horse.

A horse quickly resents and is easily frightened by abrupt or sudden movements about his head. Bridling should, therefore, be done in a most deliberate and careful manner. The ears are especially sensitive, and extreme care must be used in drawing them under the crownpiece and into their place. A reliable test that a horse has not been mistreated in bridling is that he permits, without sign of fear or resentment, the gentle stroking of his ears.

417. Except in the field, or when equipped for field service or when the duty is such as to make it necessary to tie up a horse, the halter is taken off before bridling, the reins being first passed over the neck.

If the halter is not taken off, the halter strap is tied in the left pommel ring, or, if the horse be not saddled, around his neck. When the halter is to remain on, care should be taken that the halter rope is untied from the manger before attempting to bridle a horse that is liable to pull back.

TO FIT THE SNAFFLE BRIDLE.

418. 1. The cheek straps are adjusted so that they are of even length and so that the snaffle rests easily in, *but does not draw up* the corners of the mouth. A mouthpiece that is too low strikes the tushes and makes them sore; one that is too high causes the horse discomfort and makes the corners of his mouth sore.

2. The brow band is examined. If it is too short, it causes the sensitive skin at the base and back of the ears to be galled

or cut by the crownpiece. If it is too high on the crownpiece, it causes the same trouble at the base and sides of the ear.

3. The throat latch is buckled loosely, being only sufficiently tight to prevent the crownpiece from slipping over the horse's ears. Generally speaking, it should permit the entire flat of the hand to be inserted between it and the throat when the horse's head is reined in. A tight throatlatch interferes with the large blood vessels of the neck, with the gullet, and also with the windpipe.

4. The mane and forelock are carefully smoothed out under the crownpiece to avoid causing a sore at the poll and also to present a neat and tidy appearance.

TO FIT THE DOUBLE BRIDLE.

419. 1. The snaffle is fitted as described in the preceding paragraph.

2. A curb bit is selected with a mouthpiece of such length that the branches bear easily against the horse's lips. A narrow bit pinches the lips, while a wide one works about and bruises the lips and the bars. The mouthpiece is best examined for width by inspecting it from the underside of the lower jaw.

3. The cheek straps are adjusted so that the mouthpiece of the bit rests as near as possible opposite the chin groove, but touching neither the tushes nor the corners of the mouth. Generally speaking, the bit should rest about 1 inch above the tushes of horses and about 2 inches above the corner teeth of mares. It rides below the snaffle.

4. The curb chain is fastened outside and below the snaffle. It must be twisted to the right until it lies flat, and it should rest in the chin groove opposite the mouthpiece of the bit. If not properly adjusted it will have a tendency to ride up and press upon the sharp bones of the lower jaw. The curb chain should be loose enough to admit the flat of two fingers between it and the chin groove when the branches of the bit are in line with the cheek straps. When brought to bear, the branches of the curb bit should make an angle of about 45° with the line of the horse's mouth.

When horses are restive it is often due to faulty adjustment of the bits and curb chain.

5. The throatlatch and brow band are fitted as directed in paragraph 418.

TO REMOVE THE DOUBLE BRIDLE.

420. The instructor commands: UNBRIDLE.

Stand on the left side of the horse; pass the reins over the horse's head, placing them on the bend of the left arm; unbuckle the throatlatch, grasp the crownpiece with the right and assisting with the left hand, gently disengage the ears; grasp the bit with the left hand, and gently disengage it from the horse's mouth by lowering the crownpiece; place the crownpiece in the palm of the left hand, take the reins in the right hand, pass them together over the crownpiece, make two or three turns around the bridle, then pass the bight between the brow band and crownpiece and draw it snug.

The bridle is hung up by the reins or placed across the saddle on the blanket.

If the horse has no halter, unbridle and push the bridle back so that the crownpiece will rest on the neck behind the poll until the halter is replaced.

TO ROLL THE OVERCOAT.

421. Spread the overcoat on the ground, inside down, skirt buttoned throughout, sleeves parallel to the middle seam, collar turned over on the shoulders.

Turn the tails of the coat under about 9 inches, the folded edge perpendicular to the back seam. Fold over the sides to form a rectangle not more than 34 inches across, according to the size of the coat. Roll tightly from the collar with the hands and knees and bring over the whole roll that part of the skirt which was turned under, thus binding the roll.

THE BLANKET ROLL FOR INDIVIDUALLY MOUNTED MEN.

422. Spread the shelter half on the ground, roll straps underneath, and fold over the triangular part on the rectangular part. Turn under the roll strap edge of the shelter half so that the width of the fold will be 8 inches. Fold the blanket once

across the longer edges and lay the blanket on the shelter half, folded edge within 1 inch of the roll strap edge of the shelter half. Fold the sides of the blanket and of the shelter half inward, width of folds about 11 inches. The shelter tent pole and pins are now laid on the blanket at the edge farthest from the roll strap edge, pole on one side of the center line, pins on the other, so as to allow the roll when completed, to bend at the center. Place the underclothing on the blanket. If the coat is to go in the roll, spread it smoothly over the blanket.

Roll tightly toward the roll strap edge, using hands and knees, and bring over the entire roll the part of the shelter half which was turned under, thus binding the roll. Buckle the two available roll straps about the roll, passing them around twice. The roll thus formed should be about 44 inches long.

TO PACK THE SADDLEBAGS.

423. Saddlebags are packed as follows:

In right pocket.

Inside of lining:

1 currycomb.
1 horse brush.
1 grooming cloth.
2 fitted horseshoes (with nails).

Outside of lining, toilet articles:

1 cake soap.
1 comb.
1 toothbrush.
1 tooth paste.
1 towel.

In left pocket.

1 meat can.
1 knife.
1 fork.
1 spoon.

1 cup (if old mod. equipment).
1 bacon can.
1 condiment can.
2 days' reserve rations.

TO PACK THE SADDLE.

424. The overcoat, when carried, is rolled as prescribed, and strapped on the pommel.

When the slicker is carried, either with or without the overcoat, it is suspended vertically from the collar, folded two or three times across its short dimension so as to leave the outside of the slicker out, and then thrown across the horse's withers, collar to the left and coat hanging evenly on the two sides. The slicker is then secured in the middle, with center pommel coat strap only.

425. The saddlebags, packed as prescribed, are attached to rear of saddle by saddlebag stud and staples and to cincha rings by saddlebag straps.

The blanket roll, made as prescribed, is strapped to cantle with one short strap and to the saddlebag rings with two long (60-inch) straps; short strap drawn tightly.

The feed bag, folded neatly, with marking displayed, is secured under straps of left saddlebag.

The canteen is snapped to right cantle ring.

The lariat, attached to the picket pin by lariat strap, is neatly and tightly wound about the picket pin and secured. The picket pin is then snapped to left cantle ring.

TO STAND TO HEEL.

426. The instructor commands: STAND TO HEEL. Each man stands at attention 1 yard in rear of and facing his heel post. At the picket line he is 1 yard in rear of and facing his horse.

TO STAND TO HORSE.

427. The instructor commands: STAND TO HORSE. Each man places himself, facing to the front, on the left side of his horse, eyes on a line with the front of the horse's head, so that he can see along the front, and takes the position of attention, except that the right hand, back uppermost, grasps both reins, forefinger between them, about 6 inches from the bit. The reins are on the horse's neck.

TO MOUNT.

428. 1. *Prepare to mount*, 2. MOUNT.

At the first command drop the right rein, take two back steps, stepping off with the left foot, at the same time sliding the right hand along the left rein; half face to the right; this should

place the man about opposite the girth; with the aid of the left hand take both reins in the right, forefinger between the reins, and place the right hand on the pommel, the reins coming into the hand on the side of the forefinger and held so as to feel lightly the horse's mount, the bight falling on the right side. Place a third of the left foot in the stirrup, with the assistance of the left hand if necessary; rest upon the ball of the right foot; grasp a lock of the mane with the left hand, the lock coming out between the thumb and forefinger.

At the command *mount*, spring from the right foot, holding firmly to the mane and keeping the right hand on the pommel; pass the right leg, knee bent, over the croup of the horse without touching him; sit down gently in the saddle; let go the mane, insert the right foot in the stirrup, pass the reins into the left hand and adjust them.

POSITION OF THE SOLDIER.

429. The body should be balanced on the middle of the saddle, head erect and square to the front, chin slightly drawn in. Buttocks should bear equally, and as flat as possible, upon the middle of the saddle. Reins come into the left hand on the side of the little finger and leave it between the thumb and forefinger; little finger between the reins, right rein above it; the other fingers are closed, thumb pointing to the right front in prolongation of the forearm and pressing the reins firmly on second joint of the forefinger. The end of the reins fall to the front and outside of the right rein. The left forearm is held close to the body without pressure, the back of the hand nearly vertical; the left hand in front of the pommel of the saddle and as close to the top of the horse's withers as possible, without resting on the pommel. The right hand rests behind the thigh, arm hanging naturally. The feet are inserted in the stirrup so that the ball of foot rests on the tread of the stirrup, heel slightly lower than the tread.

STIRRUPS.

430. The stirrups should support the feet and the weight of the legs only, and be of such length that when the legs are in

proper position, the feet out of the stirrups, the treads will be on a level with the lower part of the inner ankle bone.

The length depends somewhat on the formation of the man; a man with a thick, heavy thigh requires a shorter stirrup than a man with a thin, flat one. For long distances at the gallop and trot, a shorter stirrup is required than at a walk.

When riding, the stirrups take up, in a measure, the weight of the body in its descent to the saddle, by yielding of the ankles to prevent shock. This action is an easy, quick stiffening of the muscles, which distributes the downward motion between the feet, thighs, and seat.

If, after the man has exercised a short time at the slow trot, he has a close seat, his leg in proper position, with his heel down, but does not easily keep his stirrup, then the stirrup requires shortening.

TO DISMOUNT.

431. 1. *Prepare to dismount*, 2. DISMOUNT.

At the first command seize the reins with the right hand, in front of and near the left, forefinger between the reins so that they come in on the side of the forefinger; place the right hand on the pommel; let go with the left hand, grasp a lock of the mane, the lock coming out between the thumb and forefinger; take the right foot out of the stirrup; partly disengage the left foot, body erect.

At the command *dismount*, rise upon the left stirrup, pass the right leg, knee bent, over the croup of the horse without touching him; descend lightly to the ground, remove the left foot from the stirrup and place it by the side of the right, body erect; let go the mane; place the end of the reins on the neck near the pommel of the saddle with the right hand, which then seizes the left rein; face to the left, take two short steps, left foot first. Slip the right hand along the left rein, and take the position of stand to horse.

GATHERING THE HORSE.

432. Before the horse is required to execute any movement he should be given a preparatory signal. This signal should be given at the time of the preparatory command or signal.

Whatever the movement to be executed, the signal is always the same. Its object is to attract his attention and to prepare him for a movement. This is called *gathering the horse*.

Having a light pressure of the bit against the horse's mouth and a light feel of the lower legs against his sides, the rider, in order to gather him, increases the pressure of the lower legs, with heels well shoved down, and slightly increases the tension of the reins. These pressures are increased intermittently until the elastic movement of the horse under the rider indicates that the former has observed the signal.

If when at a halt the horse backs or when marching decreases the gait, the tension applied to the reins has been too great. If when at a halt the horse moves forward or when marching he increases the pace or gait, the impulse given him with the legs has not been met or controlled by the reins.

Each force should exactly balance the other and the horse, held between the two, should feel responsive to the indications and aids of the rider.

TO MOVE FORWARD.

433. Being at a halt: 1. *Forward*, 2. MARCH. At the first command the rider gathers the horse; at the second he simultaneously (1) pushes his buttocks to the front, (2) acts with both legs according to the temperament of the horse, (3) eases the reins by slightly relaxing the fingers, giving the wrist, without losing contact. The aids cease to be active as soon as obedience is obtained.

TO HALT.

434. Being at the walk: HALT. The rider sits well down in the saddle and gathers the horse; he then simultaneously (1) closes the fingers on the reins, bending the wrist and if necessary moving the hands in and back with the body; (2) slightly increases the pressure of the legs; (3) imposes the weight of his body against the horse's back by convexing his loins backward.

As soon as the horse slackens the gait ever so little the pressure of the fingers and legs is slightly relaxed to reward him

for his obedience. It is then reapplied and again relaxed until the horse has completed the movement desired.

In order to prevent the horse from halting entirely on the forelegs, the rider must increase the pressure of his legs to induce the horse to engage his hind legs farther under the mass. By convexing his loins and imposing his weight against the muscular activity of the horse's back the rider limits the functionizing of the muscles which control impulsion and thus permits the hind legs to participate in stopping or in reducing the gait. It is faulty to lean back in an exaggerated position, because of the tendency to permit the legs and thighs to go forward and to act with a dead pull of the reins on the horse's mouth; if done abruptly, it is painful to a horse and may cause him to halt in a hard and jolty manner.

ESTABLISHING CONFIDENCE.

435. The first object to be attained in elementary instruction in equitation is to establish the confidence of the rider. Many recruits, especially those who have never before had any experience with horses, entertain an instinctive and unreasoning timidity, which can be overcome only by slow, careful, and quiet instruction, involving judgment and tact on the part of the instructor.

Only quiet, gentle, and well-trained horses are used in the instruction of recruits. Effort must be made to avoid falls or other accidents which might spoil the beginner's nerve and so retard his progress.

With this object in view the beginner is permitted to use the same horse for the first few mounted lessons. When it is seen that he is beginning to understand his mount, horses and riders are changed, usually with each lesson, and the training of a soldier should be considered incomplete and unsatisfactory until the average animal goes quietly and pleasantly with him at any gait.

For the first few lessons, both as a measure of security and to avoid weariness, stirrups should be used. In some cases greater security is also afforded if the stirrups are connected by a strap passing under the horse's belly and of such length that the man's knees are not drawn away from the saddle. The

strap saves falls, because it prevents the rider's legs from flying out in any direction; and the confidence it instills enables him to acquire balance more quickly.

Later lessons, both for the purpose of acquiring confidence and learning balance, must include riding without stirrups. Confidence is also imparted through riding without reins. This is one of the best ways for a beginner to acquire a good strong seat, which is independent of the reins. Fixity of the seat helps to produce good hands.

The early mounted lessons are conducted at a walk. The trot and then later the gallop are taken up as soon as practicable, but not until the instructor judges that the confidence acquired justifies proceeding to the faster gaits.

GAITS OF HORSES.

436. The gaits are the walk, trot, canter, and gallop.

The *walk* is at the rate of 4 miles an hour, or 1 mile in 15 minutes, or 117½ yards in a minute.

The *maneuvering trot* is at a rate of 8 miles an hour, or 1 mile in 7½ minutes, or 234½ yards a minute. For purposes of individual instruction the rate of the trot may be diminished to the rate of 6 or 6½ miles an hour by the command *slow trot*. At the command *trot out*, the rate is 8 miles an hour.

The *canter* is at the rate of 8 miles an hour and is generally used for individual instruction.

The *maneuvering gallop* is at the rate of 12 miles an hour, or 1 mile in 5 minutes, or 352 yards a minute.

The length of the stride is about 10 feet.

The *full* or *extended gallop* is at the rate of 16 miles an hour.

ANALYSIS OF GAITS.

THE WALK.

437. The walk is a gait in which the feet are lifted in succession and put down in the order of their lifting. If the right front foot begins the gait, the other feet are lifted in the following order: Left hind, left front, right hind. The walk should be free, easy, and elastic.

THE TROT.

438. The trot is a gait at which the horse springs from one diagonally disposed pair of feet to the other; between the beats all the feet are in the air. The right front and the left hind are called the *right diagonal*, the left front and the right hind the *left diagonal*.

THE GALLOP.

439. The gallop is the most rapid of gaits. It must not be used unnecessarily over long distances, particularly on hard roads, where the concussion on the feet is severe, nor when the saddle is packed. However, when the rapidity of the normal trot is not sufficient the rider, when out alone, would take the gallop in preference to increasing the speed of the trot.

The horse is said to *lead right* when the feet on the right side are more advanced than the corresponding feet on the left side. When the feet are advanced in the inverse order the horse is said to *lead left*.

The gallop is marked by three beats and a period of suspension.

If the horse be leading right, the first beat is marked by the left hind foot, the second by the nearly simultaneous placing of the right hind and left front feet, and the third by the placing of the right front foot. The horse then leaps into the air from, and advances, the right front foot. In leading left the beats are right hind, left hind, and right front, left front.

A horse gallops *true* when he leads right in turning to the right, and leads left in turning to the left.

He gallops *false* when he leads left in turning to the right, or conversely. A horse is *united* when he gallops right (left) in front and right (left) behind. He is *disunited* when he gallops right in front and left behind, or conversely.

The gallop should be begun on the circle, because the feet are then favorably placed for taking and maintaining the proper lead. The horses thus start off more calmly, and the rider is enabled to regulate the pace by describing a circle of greater or less circumference.

As soon as the horse breaks into the gallop, the rider should move in cadence with his horse. The back and legs unite in

the rhythm of the gait, the hands accompany gently and *without exaggeration* the movements of the head and neck.

During the gallop the command *at ease* is frequently given. The riders execute the suppling exercises which have been indicated as necessary in each case; they abandon themselves completely to the motion of the horse, and thus acquire ease and flexibility. Prolonged periods at the gallop on calm and free-moving horses are most favorable for easily obtaining this result.

The canter is the collected or school gallop.

SECTION III.—LEADING THE MULE.

440. The mule when hitched is led and maneuvered by means of the bridle. When leading the mule, the soldier takes position on his near side, holding the reins near the bit in the right hand and the loose end of the reins in the left hand.

To gather the mule, the right hand is raised slightly until it touches his lower jaw. The mule must always be gathered before moving, before halting, and before changing gait or direction.

The mule must never be faced or threatened by the man leading him. He must be taught by quiet and gentle treatment to effect all changes of gait and direction evenly. He should not be turned short, but on the arc of a circle of 2 yards' radius. He should be led with a loose rein and urged on, if he lags, from the rear.

SECTION IV.—HARNESS.

441. Brackets will be placed on the heelposts of each stall as follows:

On the right-hand heelpost the bracket will be placed to receive the reins, bridle, breast strap, and traces. On the left-hand heelpost the bracket will be placed to receive the breeching and saddle.

442. In the field the harness will be laid on top of the carts and covered with a paulin.

TO HARNESS.

443. The instructor causes a mule to be harnessed; points out and names the various parts of the harness and explains their use. He then has the harness taken off and replaced on the brackets.

The harness being on the heelposts, the instructor causes the men to stand to heel and commands: HARNESS. At this command each driver places the harness upon the mule in the following order:

Saddle and breeching.—The driver grasps the saddle in his left hand, slips his left forearm under saddle, grasps the breeching in his right hand, and approaches the mule on the near side; places the breeching on the mule gently and lifts the saddle into position on the mule's back, being careful that the turnback is tight. He then tightens the belly band.

Breast strap and traces.—The driver grasps the neckband with the left hand, the two traces being folded over and held in the left hand. He then releases the halter shank from the manger and passes it through the opening between the breast strap and the neckband. The neckband is then passed over the mule's head and placed in position with shoulder straps so adjusted that the breast strap will remain horizontal.

The trace on the near side is then passed through the loin loop and laid across the mule's back. The trace on the off side is similarly placed.

Bridle and check rein.—The driver will place the check rein over the mule's head; put the bridle on, adjust it, and fasten the check rein to the saddle.

If the halter has not been removed, the halter shank should be passed around the mule's neck and fastened. The driver then takes post on the near side of the mule, grasping the lead rein 6 or 8 inches from the bit and holding the shank of the lead rein in his left hand.

TO HITCH.

444. The instructor commands: HITCH.

Each driver leads his mule to the front of the shafts and backs him into position. The shafts are raised and inserted in the shaft loops. He then buckles the shaft-loop straps suffi-

ciently tight to hold the shafts in position. In fastening the shaft-loop strap care should be taken that this strap passes on the outside of the trace.

Traces.—The trace on the near side is next fastened to the singletree by means of the trace chains. The one on the off side is similarly fastened.

Quarter straps.—The near-side quarter strap is passed under the trace, between the shaft and the quarter-strap loop, around the shaft, and buckled. The off-side quarter strap is similarly fastened.

The driver then takes post on the near side of the mule and near his head, grasping the lead rein in his right hand, with the loose end in his left hand, and remains at attention.

TO UNHITCH.

445. *Quarter straps.*—Quarter straps are unfastened and the loose ends passed down through the quarter-strap loops.

Traces.—Trace chains are unfastened and the traces laid over the mule's back.

The shaft-loop strap.—The shaft-loop strap is released and the shafts lowered gently to the ground.

TO UNHARNESS.

446. The mule being harnessed the instructor commands: UNHARNESS. At this command the harness will be removed as follows:

Bridle and checkrein.—The driver unsnaps the checkrein from the saddle, takes off the bridle; unties the halter shank from around the mule's neck and holds it in his left hand.

Breast strap and traces.—The trace on the near side is pulled forward out of the loin loop and is passed over the breast strap between the two shoulder straps. The trace on the offside is arranged in a similar manner. The breast strap is raised with the left hand and the neck band passed over the mule's ears. The left forearm is passed under the neck band and the mule is then tied to the manger.

The bridle and breast strap are replaced on the bracket on the heelpost.

Saddle and breeching.—The bellyband is loosened. With the left hand under the forward edge of the saddle and the right hand grasping the hip straps the harness is lifted upward and to the rear clear of the mule. The left forearm is slipped under the saddle, and the breeching is brought forward so that the back strap can be grasped by the left hand. The harness is now replaced on the bracket.

FITTING HARNESS.

447. The cart harness consists of a breast strap and traces, or Dutch collar, saddle, and breeching.

When the soldier has become familiar with harnessing and unharnessing he should be thoroughly instructed in the fitting of harness. This subject should be given proper attention, everything being done to impress upon the soldier its importance.

Bridle.—The bridle is fitted as described in the *soldier mounted*.

Checkrein.—The checkrein should be so fitted that it will not exert pressure on the bit unless the mule lowers his head from its normal position.

A checkrein that is too tight puts the animal at a disadvantage when he is required to pull a heavy load; in addition, it will cause him to fret and is apt to make him vicious.

Breast strap.—The breast strap should be so fitted by means of the shoulder straps that it will remain horizontal and bear on the fleshy part of the mule's breast. Care should be taken that it is not adjusted high enough to come in contact with the windpipe. If the breast strap is too low it will make the animal awkward in movement.

Saddle.—The saddle should be placed in rear of the withers approximately 4 fingers' breadth from the shoulder blade. In no case should it be placed so that it will come in contact with the backbone or withers.

Breech strap.—The breech strap should be so adjusted that it will bear quickly when the mule is required to check the movement of the cart, but will not impede his movement while pulling. This adjustment is very important. It can best be made by watching the mule while pulling and tightening the

straps as much as can be done without impeding the free movement of the animal.

Hip straps.—The hip straps should be of such length that the breech will bear just below the point of the buttocks. The lower the breech strap is adjusted, the less does it assist the mule in checking the movement of the cart.

Loin straps.—The loin straps should be so fitted that the traces, when taut, will be straight and without a down-pull on the loops.

Traces.—The length of the traces must depend in great measure on the size of the animal, and for this reason no set rule can be given. Care must always be taken, however, to place the mule as near his load as possible and to see that the traces form a straight line from the breast strap to the single-tree.

The loose ends of the trace chains are fastened to the hooks provided on the front part of the cart frame.

CARE OF HARNESS.

448. Breaks and rips in harness should be repaired without delay. Temporary repairs may be made by the driver, but he should take the harness to the saddler for permanent repairs as soon as possible.

Harness must be kept clean and in good condition no matter how often the conditions of weather require it to be worked on. At least once each week every harness should be given a general overhauling, parts separated, buckles and fastenings disengaged, and all leather and metal parts cleaned with harness soap and rubbed.

When leather shows signs of drying out it should be given a light coat of neat's-foot oil. The oil can be rubbed in on the rough side of the leather so as to discolor tan leather but slightly.

Leather must not be soaked with water. Just enough water is used with saddle soap to produce a lather. Leather may be cleaned with castile soap and then coated with the lather of saddle soap. Saddle-soap lather should be left on, and after about 15 minutes the leather rubbed with a dry cloth.

SECTION V.—CARE OF SADDLE HORSES.

449. In order to keep saddle horses in condition they must be fed and worked properly and the greatest care exercised in preventing sore backs.

They must be well groomed and their feet kept in good condition.

BLANKET.

450. The blanket should, if possible, be kept dry and free from sand, caked dandruff, and hairs. It should be frequently shaken out and well switched, if necessary, to restore its pliability and remove dust and hair. In warm weather, when the animal sweats freely, a fresh, clean bearing surface on the blanket should be placed next to the back.

It is not a good plan to dry the sweat-soaked surface of a folded blanket in the sun and put this dried surface next the back the following morning. Such drying hardens the dandruff mixed with sweat and dust that is always present, and makes this part of the blanket rough and hard. It is preferable to double the sweat-soaked folded blanket on itself, so it will remain moist and soft.

Care must be taken that the blanket is free from sand and dust and that the mane lies properly. The blanket is placed, with no wrinkles in any of its folds, in position in such a manner that it will not disturb the mane or ruffle the hair of saddle bed.

UNSADDLING.

451. On arriving in camp and having dismounted, the cincha is eased off about 3 inches and the bearing of the saddle changed by moving it to rear or front at least an inch. The saddle is left on the back for 10 minutes to enable the almost bloodless skin beneath (caused by weight of rider and pack) and the tired saddle muscles to regain to some extent their lost tone, while the rider attends to the bridle and halter and the religious duty of closely examining the feet for loose shoes, rocks, nails, bruises, thrush, and interfering sores. The saddle is then removed, the blanket turned over, and let so remain in place until the back has dried.

Never remove the saddle and blanket in such a way as to expose a wet back either to the hot rays of the sun or to a sudden cooling. The pressure of the saddle restricts the blood supply and so weakens the tissues of the back. In this condition a hot sun more readily burns or inflames the skin, while a sudden cooling contracts the blood vessels and prevents the proper return of the blood to nourish the tissues. In either case sores and swellings may result.

When the saddle is removed the back should be promptly rubbed and massaged to dry it and restore the circulation.

452. If any dry spots are noticed on the sweaty skin while the blanket is being turned over, they are inflammations of the skin, produced by unequal distribution of weight, and are liable to puff up later if not attended to. Their location should be marked well and not neglected. When the back is dry the blanket is removed and the back taken care of. The spots referred to are massaged well from front to rear, the saddle bed bathed with clean water, dried, and let the animal roll if he will. Should small swellings appear, however, the blanket is kept in place until a soaking wet gunny sack is procured. The blanket is then removed and the swelling vigorously massaged; the wet folded gunny sack pack is then put over the back and secured. The animal is not allowed to roll if it can be avoided, and the pack is kept wet during the night. In the majority of cases the animal will be ready for careful saddling in the morning.

453. Should a gall have been produced the place should be bathed and disinfected with a creolin or carbolic-acid solution (1 ounce to the quart of water), the spot protected from the flies, cold packed if necessary, and the animal led until nature effects a cure. Close attention to cleanliness, disinfection, and stimulation of the wound will hasten the process. A solution of aloes or alum in water (one-half ounce of either to a pint of water) as a stimulant may be used.

454. Even with very close attention to saddling, galls may be produced if the rider is not a careful one.

Irrespective of the fit of the saddle and condition of blanket, the things that cause galls and "bunches" most frequently are carelessness in balancing and securing the pack, a lounging, shifting seat, and a sloppy method of handling the reins, inattention to proper cinching, unequal length of stirrups, neglect

of adjustment at the halts, the riding of a lame animal, and the galloping of a leg-weary one.

BITTING.

455. The inside of the lower jaw is often injured by ignorant handling of the curb rein. These injuries appear above the bridle teeth or "tusks" and present inflamed places that sometimes exhibit ulcers. Quite often the bone is splintered. Less frequently the under part of the jaw, in the vicinity of the curb groove, is bruised and perhaps fractured more or less completely.

Any of these conditions may be made manifest by the animal "fighting the bit," "throwing the head," or rearing.

456. These injuries should be treated by putting the animal on a snaffle at once and placing it high enough in the mouth to avoid any pressure on the injured parts. If ulcers appear, they are washed out frequently with a saturated solution of boracic acid. When the bone is splintered it is usually a serious matter and requires the services of a trained veterinarian.

PART VI.

MANAGEMENT OF DRAFT ANIMALS.

SECTION I.—RULES FOR DRIVERS.

457. Drivers of all animal-drawn vehicles are prohibited from leaving their teams standing unheld or untied.

Drivers must refrain from shouting or making threatening noises or motions around their teams.

Always gather a team before starting, changing direction or changing gait. This is done by tightening the reins and urging the animals into the bits.

Keep a steady pressure on the reins; never drive with reins lying loosely on the animals' backs.

See to it that the vehicle is well greased.

Vehicles in column should never be stopped when it can possibly be avoided. The adjustment of the load or the picking up of articles dropped off should be done without stopping, if at all possible. Stopping an entire column for any but a serious cause is inexcusable, and is a form of carelessness or willfulness that should be punished.

Drive at a steady gait; do not "back and fill;" gain lost distance gradually.

RULES OF THE ROAD.

458. Always be courteous; give plenty of room to others; remember that a smile or a pleasant laugh will do more than a growl or surly remark.

When a vehicle is in column it is necessary to follow in trace, but be sure to drive where it is intended, and do not encroach upon the road or cut corners.

When alone always drive on the right side of the road, and keep to the right when meeting vehicles.

On a narrow road a loaded team has the right of way, and it should be given ungrudgingly.

On overtaking a vehicle pull out to the left and pass it at a steady pace without cracking the whip or coming in too close.

When followed by other vehicles, or when driving in a place where other vehicles are liable to be following, always signal before slackening the gait or changing direction. Signals are made by holding the hand or whip vertically for slackening and horizontally for turning.

When approaching a railroad crossing bring teams to a walk, a halt if necessary; but always *look* and *listen*.

Never halt upon a railroad track.

POSITION OF THE DRIVER.

459. The driver should sit firmly but comfortably in the seat, body erect without stiffness, and elbows close to the sides, with the point almost touching the hips.

He should not lean forward.

The wrist should be well bent, as this enables him to keep a steady pressure on the reins.

The forearm should be horizontal, and the fingers from 3 to 5 inches from the center of the body, with the knuckles to the front.

HOLDING THE REINS.

460. Place both reins in the left hand, the left rein over the forefinger and the right rein under the middle finger. Thus you have two fingers between the reins. The reason for this is that it gives much more scope for play of the wrist on the mouths than if you only have one finger between the reins. The thumb should point straight to the front and should not be pressed down on the reins. The forefinger will be held well out, pointing to the right rear. This will keep the rein close to the knuckle, and the pair may be easily moved from side to side by simply turning the back of the hand up or down; up for left turn and down for right turn.

The right hand is known as the whip hand and, in addition to holding the whip, is used to assist the left hand in shortening the reins by pulling them through from behind the rein hand.

HANDLING THE TEAM.

461. Bring the pair to attention by feeling their mouths gently and speak to them. If they do not respond, touch them gently with the whip.

The moment they start, drop the hand slightly; "jibbing" is often caused by neglect of this precaution.

In all movements from a halt each driver gathers both of his horses just before they are to move; if in march and the gait or direction is changed, both horses are gathered just before they change gait or direction. Care should be taken that both the horses move off together and change the gait at the same time.

In starting a cart or wagon it is especially important that both the horses of the team should throw their weights into the collars gradually but simultaneously. Unremitting attention is required upon the part of every driver in order that each horse shall at all times do its proper share of the work.

By observing these important rules, a team is enabled to pull steadily together, and the horses are not fatigued by jerks, which make them balky, gall their shoulders, and break the harness.

TO START.

462. Feel all the animals' mouths, and, if necessary, give them the word to go, dropping the hand to them at once until the vehicle is fairly off. The wheelers ought to start the wagon, and this can be effected by touching them with the whip if they require it. It is never safe to start without having the whip in the right hand ready for immediate use. The whip is to the driver what the leg is to the rider; that is, it keeps the team up to their bits. As soon as the team is going straight, take the right hand off the reins, at the same time keeping it close by ready for any emergency.

PULLING UP.

463. To pull up, shorten all the four reins by passing the left hand up to the right or else by pulling all the four reins through from behind, as before explained; then, having the right forefinger on the left lead rein, the middle finger on the left wheel, and the lower fingers of the right hand on the right reins, pull both hands back toward the body, and if necessary lean back a little.

Should the team be getting the better of you and you find that you can not stop it, it will be found a great assistance to place the right leg over all the four reins, as you may be able to stop them by the extra power and leverage by the position of the leg. Of course, it is understood the brake has been applied.

RULES.

464. Always keep a steady pressure on the reins.

Never remove the left hand from reins.

Alter position of bits if the team pulls hard.

Always take a pull at the team to steady it just before you arrive at the crest of a hill, and begin to descend slowly, holding the leaders steady, and with just enough traction to keep their single trees from hitting them.

In crossing ruts and in turning corners be careful that the leaders are out of draft; otherwise the pole may be snapped off or the wheelers pulled down.

If, while going down a hill and especially when near the bottom, you find a wheeler slipping on his hocks, do not try to pull him up, but drop the hand and allow the team to go a trifle faster.

SECTION II.—CARE OF DRAFT ANIMALS.

465. Constant and intelligent supervision of adjustment of the bearing parts of harness, packs, and saddles is productive of better results than medication in keeping transportation animals in serviceable condition.

Animals in a command lose flesh rapidly for the first 10 days of a march, and during this period the adjustment of all parts of the harness, more especially the collars, should be given close attention.

466. Feeding should be done soon after reaching camp, a little hay being offered first. Animals are watered before feeding grain when possible. Grain is offered immediately after watering, and what remains of the hay for that day is then placed before the animal. The morning water must of necessity be governed by circumstances. If absolutely sure of water on the road, say one hour after breaking camp, it would be needless waste of time and energy to water immediately before or after the morning feed on the line.

467. Collars of steel, such as those furnished to artillery commands, are preferable to leather for military use, when properly adjusted and cleaned. When improperly adjusted they are inferior to the leather article. Steel collars are adjusted by means of bolts and plates. Leather collars by means of top straps and hames. When these methods will not produce the desired results the use of collar pads must be resorted to. Felt collar pads are not desirable as they soon become stiff and hard.

A collar should fit snugly to the sides of the neck without compressing it, and its bearing surface should rest squarely on the bed of muscles situated on the front of the shoulder. When in position there should be a space between its lower part and the windpipe sufficiently large to comfortably admit the insertion of the open hand, back up, as far as the wrist.

All collars should be furnished with a neck plate of zinc, for the protection of the top of the neck against rubbing.

To prevent blistering of the top of the neck on hot, sunny days, it will be found that a wet sponge or a wet piece of folded gunny sack, properly secured to the top of the collar and wetted at intervals, is effective.

The bearing surface of steel collars and neck plates should be washed carefully soon after making camp. *They should never be scoured with sand or rubbed with an abrasive substance, for the reason that the steel beneath the zinc plating may be thus exposed.* The exposed steel rusts quickly, pits rapidly from the action of the acid sweat, and acts as a rasp would on the soft tissues with which it comes in continual contact.

The bearing surface of leather collars should not be scraped unless considered absolutely necessary to remove accumulated dirt due to negligence. If scraped, they should be boned smooth and then slightly oiled. Leather collars may be easily cleaned

with a damp sponge. They should be thus cleaned each evening. A careful man will not let his collars remain on the ground overnight, but will hang them on a wagon pole or put them in some safe place where they will be protected from the rain and the dust of the camp.

468. On arrival in camp collars are left in position for about 15 minutes. Their weight on the hot, tender skin affords sufficient pressure to prevent the formation of swellings so often observed after the collar is suddenly removed. Normal circulation will establish itself gradually under collar pressure alone, and the skin of the shoulders and neck will regain its tone and elasticity.

After removal of the collar, the shoulder and neck is bathed with clean water; this removes sand and dust that would otherwise remain in the hair, where it may not be reached by the horse brush.

Salty water, or a weak solution of vinegar in water, when applied to the shoulders and neck, acts as a tonic to the jaded skin.

Animals with narrow, lean shoulders should not be placed in the collar. For these, if they must be harnessed, a breast strap (Dutch collar) should be used.

Care must be taken in putting a collar on a horse that the mane hangs naturally beneath the neck plate. If the collar is a steel one, care is taken when snapping it in place to see that the skin of the upper part of neck is not pinched between the neck plate and the collar itself.

If swellings appear on the shoulders they are massaged to remove them and in addition a cold-water pack is applied during the night; a wet sack properly adjusted and held in place will answer the purpose. If a gall appears it should not be greased, but washed with water and soap, dried thoroughly, and a weak solution of alum (one-half ounce to a pint of water) or a solution of aloes in water (one-half ounce to the pint) applied. If the animal must be worked, a chambered (cut-out) pad is placed over the spot to remove pressure. Greasy ointments serve as a trap for dust and sand, and consequently should never be used.

469. The length of traces must be verified frequently. The chain links as a guide in hitching can not be depended on.

Leather traces stretch considerably in wet weather. A difference of half an inch in the length of traces will cause trouble on the shoulder of the shorter side. It is also liable to produce lameness due to irritation of extensor muscles. If the point of attachment of the trace to the collar should be too high it will cause a downward pull on top of neck, with its consequent irritation. If too low it will cause the collar to "ride," and nearly all the pressure will be on the point of the shoulders and on the windpipe.

The number of sore-shouldered draft animals in a command on the march is an excellent standard by which to judge the horsemanship of the personnel.

470. The breeching should be fairly loose; otherwise it is liable to chafe the quarters and to interfere with the free play of the muscles. It should be taken up, as the animals become thin.

Martingales should not fit too snugly, as they are very liable to chafe the soft, thin skin of the under part of the body.

471. *Yoke straps* should be adjusted with a view to the height of the pair. They should never be permitted to trespass on the bearing surface of the collars.

472. *Backstraps* should be so adjusted as not to let the saddles ride the withers, but at the same time there should not be sufficient strain on them to cause the crupper to irritate the under part of the tail.

473. *Bellybands and cinchas* should never be unduly tightened, as they cause cinch sores near the elbow and quarter-strap sores beneath the ring shields.

When a cinch gall appears, the cause is removed, the place kept clean, and a solution of aloes or alum in water applied. Either of these will stimulate the gall and deter insects from alighting on the wounds.

474. *Bearing reins* should be of such a length that the animals may have free use of the muscles of head and neck. Bearing reins are not a necessity.

475. A driving bit should be smooth and jointed. It should be so adjusted that it will not lift the corners of the mouth. If placed too high in the mouth, the animal uses his molar teeth to press against it and gains for himself the reputation of a hard-mouthed puller.



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